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MEDICAL LECTURES AND APHORISMS

BY

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TO

THE MEMORY

OF

SYDENHAM

Sic Te scientem non faciunt libri
Et dogma pulcrum, sed sapientia
Enata rebus, mensque facti
Experiens, animusque felix.
ED. HANNES

Excellenti et in re medica admirabili viro Dno. Thomae Sydenham, M.D.

89629

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I

THE HISTORY OF A CASE OF CEREBRAL HAEMORRHAGE

CONTRASTING hospital practice and private practice we may say that the main advantage of hospital practice is the opportunity it affords for examining the bodies of patients after death. The main advantage of private practice is that you know so much more about your patients during their life than you can by any means discover about persons who flit through a hospital and vanish into the darkness whence they came. Private patients say that you come to know their constitution, and there is much in this knowledge which is apt to be underrated by the inexperienced. The hospital offers 'a case in the wards', a patient whom you attend for a few days or weeks. Concerning his state of health, good or bad, before you saw him you know nothing more

than you can guess from what he tells you. What becomes of him when he leaves the hospital is usually quite unknown. Hospital experience is fragmentary. Private practice, on the other hand, sometimes affords the opportunity of knowing a man from his birth till his death. Very often you can trace throughout his whole life a series of connected morbid changes which end by bringing about his death; and when your patient is suddenly taken ill, in a manner most unexpected by his friends though not by you, your thorough knowledge of his constitution enables you to foretell what has happened before you see him. This is genuine prognosis, not guessing, but true foresight.

A man just past middle life begins to consult you about what he calls biliousness, nor can you do better than call it by the same name. Up to this time he has been a robust man, capable of great exertion of both body and mind, and he has been free from disease. But you know that, being prosperous and rich, he fares sumptuously every day. With respect to wine more particularly, you know that whereas formerly he drank it freely because he liked it, and

because it seemed to do him no harm, now he drinks it partly from habit and partly from necessity, because he cannot do without his wine; he needs it to spur his appetite for food and his capacity for work to their wonted activity. About this biliousness I will say no more than that it indicates a poisoned state of blood due to depraved digestion (cacochymy); but to the next phase of his life I wish to draw your particular attention.

When he is between forty and fifty years of age, all at once he passes blood with his urine. There are no other symptoms of any kind, and especially there is no pain; he would not have thought there was anything the matter with him had he not seen blood in his urine. Somebody tells him that he has a fit of gravel, but on examining the urine you find no gravel, nothing but blood. Careful examination of the abdomen detects nothing. You suspect that he may be the subject of granular kidneys, and looking at him from this point of view you observe that his eyelids are certainly more puffy than they formerly were: he was always pale, but now perhaps looks paler; his arteries at the wrist are palpable, a little

tortuous, and the pulse a little hard. Examination of the heart makes out nothing. The blood in the urine passes away in a week or so; careful examination afterwards detects not even a haze of albumen.

He resumes his former habits of life until, two or three years afterwards, he has another attack of bloody urine, resembling the former illness in all respects. It now seems to you still more probable that he suffers from chronic nephritis leading to granular kidneys. Nephritis is often quite latent. It is said that one person out of every two or three who die after the age of forty years is found to have kidneys more or less granular. And ever since the writings of Gull and Sutton upon what they called Arterio-capillary Fibrosis, it has been agreed that granular kidneys are almost always associated with similar disease of the small arteries. This arterial sclerosis is connected with other lesions, especially hypertrophy of the left ventricle of the heart, or, on the other hand, with degenerative changes in the myocardium.

Believing that a patient's arteries and kidneys have undergone these fibrous changes, you inquire upon

what do they in turn depend. Upon two conditions in chief. I. The age of the patient. For although no age is exempt from the possibility of arterial sclerosis and granular kidney (and I myself have seen an extreme degree of both lesions in a girl only ten years old), yet they are not common before middle life. After middle life they become very common. Our age is to be reckoned by the state of our arteries These are no new discoveries: the connexion between progressive arterial changes and advancing age was dimly known to Boerhaave,[1] and very likely to physicians before his time. II. There is a diathesis (or disposition to some special form of disease) which is very common, but for which it is difficult to find an appropriate name, because we do not understand its nature or essence. Among the diseases related to or dependent upon this diathesis are gout, gravel, obesity, diabetes, eczema, emphysema of the lungs, chronic nephritis, and, what concerns us most at present,

[1] See his 55th aphorism, and Van Swieten's commentary. 'From this gradual condensation of the smaller vessels, and consequent rigidity of the larger ones, the progress of the human body from infancy to old age is accounted for.' Armstrong, Art of Preserving Health, book ii: 1744.

arterio-capillary sclerosis. For want of a better name these diseases are often called gouty, but gout is only one form of this diathesis.

Everybody knows that this arthritic or gouty tendency depends mainly upon two conditions: it is highly hereditary, and it is much promoted by good cheer in the way of eating and drinking. Applying these doctrines to our patient, we find that there is a gouty tendency in his family, and that his habit of living well is a matter past doubt. With respect to alcohol more particularly, he has probably never been drunk in his life, and has seldom been very obviously the worse for his wine; indeed, he is one of those unfortunate persons who can carry, as the saying is, any quantity of liquor.

Now comes the important practical question: What you are to advise him to do. You cannot make him young again; you cannot change his hereditary disposition; the only condition with which you can deal is his manner of life. But beware how you attempt reformation here: 'A man like your patient, full of coarse strength, butcher's meat, and sound sleep, will suspect any philosophical insinuation, or any hint for

the conduct of his life which reflects upon this animal existence, as if you were fumbling at the umbilical cord and might stop the supplies' (Emerson). Nevertheless you feel it to be your duty to make suggestions as to an altered mode of life, and let us suppose the effect to be, not that he follows your advice, but that he looks askance upon you, shuns you, and consults some other medical man who is more buxom and pliant, who thinks the patient is a peg too low, and recommends good old port. This you regret because you know that arterial degeneration is progressive, and that even plain living cannot altogether arrest it. But he will not live plainly, and so things go on.

In the course of time you are asked to see him in a hurry because he has had a fit of some kind. He suddenly felt an unusual sensation in his head and became confused for a short time. The first thing you observe is that his speech is indistinct in consequence of defective articulation. He complains of a feeling of numbness in the right arm and leg, especially in the hand; and, on further examination, you discover that he is suffering from a slight hemiplegia

on the right side, affecting arm, leg, and face. The urine contains a cloud of albumen, but you find no casts or corpuscles, specific gravity about 1017°. The palpable and visible, rigid, tortuous, and uneven arteries testify more strongly than was formerly the case to arterial degeneration. The hard pulse and somewhat heaving heart-impulse indicate hypertrophy of the heart.

This hemiplectic seizure makes it necessary for you to speak in a more decided tone. You tell him that he is lucky that his attack has not been worse, you say he is threatened with incurable paralysis, or with rapidly fatal apoplexy, and you give him to understand that his only chance of escaping these dangers consists in living a most abstemious life as to food in general, and in giving up alcohol altogether. He listens more attentively than he did on the former occasion, because he has found that your predictions come true; he speaks as if he intended to reform, perhaps for a few weeks he does reform; he recovers clearness of speech, he regains the power of his limbs almost entirely, and you lose sight of him again for a time.

Nothing is more dangerous for such a patient than

excitement of any kind, what is called a high flow of spirits. It is well known that an exhilarating climate, the Riviera, for instance, is peculiarly unsuitable for a patient threatened with apoplexy. To such a place our patient goes, without consulting you in the matter, and the next thing you hear of him is that he died rather suddenly. You are told that before he went from home he had relapsed into all his former habits of good living; he had even drunk more freely than before, being never apparently the worse for it, and being actuated by that strange spirit which impels patients to glory in defying the doctor and all his craft. He went to an English seaside place in brilliant weather, and he seemed for a day or two to renew his youth; he was full of life, ate largely, drank largely. One morning, after a very good dinner the evening before, he was awakened early by a bad pain in his head: the pain increased; he vomited several times. He sent for a doctor and told him that it was a bilious attack of the kind to which he was subject. Unluckily the doctor believed him, and with the purpose of relieving the pain in the head, which had now become violent, he gave a dose of nitro-glycerine—a dangerous

remedy under the circumstances. In less than an hour after the doctor had left the house, he was hastily called back, and found his patient deeply comatose, dying indeed, for he lived only eight hours after the beginning of the headache. No examination of the dead body was made, but we know what would have been found: the brain substance torn up by blood, the cerebral ventricles full of blood, the heart hypertrophied, and the kidneys granular. He was nearly sixty years of age.

II

THE MEANING OF THE WORDS COMA AND APOPLEXY

I. The original meaning of the word Coma is heavy sleep, a definition which no doubt affords a clear notion of the appearance which a comatose person presents to us. Yet coma and sleep are very different. Sleep is 'privation of the act of sense, the power remaining' (Hobbes), but coma signifies privation of both act and power. A comatose person cannot be roused.

II. A comatose person is said to be Insensible, and apparently this is true: it certainly seems that he cannot see, hear, or feel. Every organ of sense consists of three parts: an exterior organ which relates to the object; an interior organ or sensorium which relates to knowledge; and a bond between these two terminal organs. The sense of sight provides an apt illustration of these facts. Pathology indicates that the visual sensorium, the 'mind's eye', the 'inmost

seat of mental sight', is to be found in the cerebral convolution called cuneus. Lesion of any part of an organ of sense produces anaesthesia, and a comatose person may be locally anaesthetic; for instance, he may be blind; but this constitutes no part of the coma.

We know much about the senses, and quite enough to justify us in believing that, if the organs of sense be implicated in coma, it is through their sensoria all and sundry. The anatomy of the brain gives no support to the notion of a sensorium commune such as Thomas Willis was disposed to find in the corpora striata. But most people think that coma is more than universal anaesthesia, and hence a third definition.

III. A comatose person is said to be Unconscious. Con-scious means that which knows with another, that which participates in knowledge, that which is an accessory or accomplice in knowledge. Thus the word consciousness or conception implies 'facultas quae se sentire sentit' (Lord Herbert); it implies something beyond and above mere sense or perception.[1]

[1] The distinction between perception and conception is so ancient and so universal as to indicate what Herbert would call a natural instinct of mankind in favour of the doctrine of Plato and Cudworth.

In short, consciousness implies mind regarded with special reference to sensation. 'Mind hears, mind sees' (Epicharmus), the organs of sensation are deaf and blind. So that definition of the word consciousness raises the old metaphysical question concerning the nature of knowledge, a dispute which in English philosophy is associated with the opponent names of Hobbes and Cudworth. But with meta-physics we, as physicians, need not concern ourselves. I will only transcribe a sentence from Cudworth which sets forth both opinions in few words. 'Knowledge is not a passion from anything without the mind, but an active exertion of the inward strength, vigour, and power of the mind displaying itself from within; and the intelligible forms by which things are understood or known are not stamps or impressions passively printed upon the soul from without, but ideas vitally protended or actively excited from within itself.'

IV. A comatose person does not move and apparently cannot move. A man can make his sensibility (or consciousness) manifest to another only by means of movements: and when these movements are of a kind which we know by our own experience to

be performed with a purpose whereof we are sensible or conscious, we call them voluntary movements. So that the sign of coma is universal loss of the power of voluntary motion. Movements which we call involuntary occur in coma: either natural movements, such as those of breathing; or unnatural movements, such as convulsions. What movements are to be called voluntary, and what involuntary, is a question of experience and custom.

We know much about the anatomy of voluntary motion, and we know that its organs are analogous to those of sensation, consisting of three parts: an exterior organ, the muscle; an interior organ, the motorium in the cerebral cortex; and the bond between the terminal organs. A lesion of any part of these structures results in paralysis; and a comatose patient often manifests signs of local paralysis over and above his coma. But most people think that the universal immobility of coma implies more than universal paralysis, and thus we approach again the dim region of metaphysical dispute; this time concerning the existence and nature of will.

Apoplexy.—Just as a comatose patient resembles

a person asleep, and is therefore called comatose, so an apoplectic patient resembles a person stunned, and is therefore called apoplectic. The word *apoplêttein* means to stun, and apoplexy means that the patient is stunned, not by a blow from without, but by a blow from within.[1] In other words, apoplexy signifies deep coma coming on suddenly and lasting till death. This is the original meaning of the word, and if it be not used in this sense, it had better not be used at all. For apoplexy is a word which has undergone strange perversions of meaning, the most extravagant being found in the phrase 'pulmonary apoplexy'.

Defining apoplexy thus, it is an uncommon disease. Unless a comatose patient have been seen to fall suddenly, stunned, we cannot aver that the coma is apoplectic. It happens that the few cases of genuine apoplexy which I have met with have all been due to haemorrhage into the pons Varolii. Although I do not suppose that this lesion is the constant cause of

[1] 'Whilst Apoplexy crammed intemperance knocks
Down to the ground at once, as butcher felleth ox.'
Castle of Indolence.

apoplexy, yet this I say, that, taking the word cerebral to signify relative to the cerebrum (in its narrower sense), apoplexy is very seldom a symptom of cerebral haemorrhage.

It is universally known that the coma of cerebral haemorrhage is delayed, deuteropathic, and supervenes upon other symptoms which mark the onset of the attack—headache, faintness, vomiting, dizziness, for example. The phrase 'ingravescent apoplexy' has been invented to designate this form of disease; but, taking the word apoplexy in the sense defined above, ingravescent apoplexy is a contradiction in terms.

III

LARGE HEADS IN CHILDREN

ADULTS seldom or never consult us on account of the size of their heads, but children are very often brought for an opinion about their heads, which are thought to be too big, and to indicate water on the brain.

Much of what I have to say is taken from a paper which I published in St. Bartholomew's Hospital Reports for the year 1871. The length of time which has since passed away gives me the advantage of sitting in judgement upon my own article, of correcting it, and of adding to it the results of larger experience.

In the first place we must remember the rapid growth of the brain in childhood. During the first year the weight of the brain is more than doubled, 'Sömmerring concluded that the brain reached its full size as early as the third year; the Wenzels and

Sir W. Hamilton fixed the period about the seventh, and Tiedemann between the seventh and eighth.' This is not far from the truth. Hence the cranium or brain-pan grows much more quickly than the face and rest of the body; and hence the skull is often wrongly deemed to be unduly large, even in a perfectly healthy child.

When we are asked for an opinion about a big head, the first thing to do is to study, not its size, but its shape. Here we are helped by the cyrtometer, which will give us an exact outline of the head in any plane. Of the three chief planes of the skull—to wit, the horizontal plane and the two vertical planes (longitudinal and transverse)—the horizontal plane is certainly the least useful, and the longitudinal vertical plane the most useful. This plane passes through the tuber occipitale, sagittal suture, and glabella. It is the plane which anthropologists have chosen, as being the most important; so much so that Mr. Huxley deems it a disgrace in any ethnological collection to have a single skull which is not bisected thus.

Our cyrtometric tracing, then, passes from the

deepest part of the nape of the neck just below the tuber occipitale, over the top of the head to the deepest part of the bridge of the nose, a little above the canthus internus of the eyelids. The shape of a natural head, upon this plane, is that of an irregular pentagon with curved sides. Of the five sides of this pentagon, four belong wholly to the cranium, four increase in length as the cranium increases in size. The fifth side belongs partly to the face, and does not grow at the same rate as the other sides or as the cranium. This fifth side may be called the base line, inasmuch as it is a straight line joining the deepest part of the nape of the neck with the deepest part of the bridge of the nose, and corresponds roughly with the base of the skull. This base line, because it is somewhat of a constant, which does not change altogether with cranial changes, is most useful as a standard of comparison.

The greater number of big heads retain the pentagonal shape; some do not. I call the former long heads or dolichocephalae, and the latter round heads or cyclocephalae, for reasons which will appear hereafter.

I. *Long Heads.*—The cranium enlarges, but the

base of the skull does not grow in proportion. The cranial sides of the pentagon lengthen, but very much more than the base line. The result is that the proportion between the greatest length of the cranium from before backwards and the base line is changed. I have measured a good many heads of healthy children under three years of age, and I find that the ratio between the greatest length of the cranium and the base line is as six are to five; in other words, the cranium is about one-fifth longer than the base. In these measurements, the greatest antero-posterior diameter must be taken parallel to the base line, an easy thing to do in the cyrtometric tracing. But even in a well-shapen head the length of the cranium may be greater than the average; yet the ratio of greatest length to base line is seldom or never more than as five are to four—that is to say, that the cranium of a healthy head is never longer than the base line by more than one-fourth of the latter. If the cranium is longer than this, I call it dolichocephalic. This is not the meaning which Retzius, who invented the word, gave to it; nevertheless, I have ventured to change the meaning for medical

purposes, and for reasons given in my paper in the Hospital Reports. The increased length of cranium shows itself before or behind, or in both directions. It is observed that the child's forehead is 'overbuilt with most impending brows', or that the occiput is very protuberant, or that the head projects both back and front.

Let us now inquire into the state of things within a dolichocephalic skull. In my former paper I declared my belief that 'dolichocephalus is always the result of increase in the solid contents of the skull, and not in its liquid contents. In other words, dolichocephalus indicates a big brain, and not water on the brain.' I have now to say that this proposition is not universally true; on the contrary, dolichocephalus is only sometimes indicative of a big brain.

1. The big brain, in most cases, is naturally big. It does not afford any signs of disease, either during life by lesion of function, or after death by lesion of structure. The person has a head and brain too great for his body; that is all we have to say of him; but that is saying much, because it is saying that he is not suffering from the incurable disease which is always supposed in such cases.

2. The big brain is sometimes unnaturally big; it is said to be hypertrophous. Its functions during life are much impaired. Yet the naked eye cannot detect any structural changes after death. Some there are who affirm that hypertrophy of the brain is due to 'diffuse interstitial hyperplasia of the neuroglia'; it would seem to be more agreeable with our present knowledge neither to affirm nor to deny. For hypertrophy of the brain is an uncommon disease. Few cases are on record, and for this reason I will narrate the following instance.

A boy two years and three-quarters old when seen for the first time. He was never able to walk; he did not cut his first tooth until he was ten months of age. When two years and a half old he became feverish, vomited, and screamed a great deal, and had fits, sometimes two a day, sometimes two a week. His mother's attention being drawn to his head, she noticed for the first time that it was large. He was highly rickety; head, breast, and limbs all deformed. His head was much enlarged; but I have preserved no tracing of it, because at that time I did not use the cyrtometer. The fontanelle was widely open, not

raised. Slight internal squint of right eye; no blindness; pupils equal. He seemed very dull, and cried fretfully. Two days afterwards he was convulsed, and died. Post-mortem appearances: Body not very thin; weight 17¾ lb. Skull: fontanelle on a level with bones, about 1½ in. square. Recent black thrombi in posterior half of superior longitudinal sinus and of lateral sinuses. No flattening of convolutions. No excess of intracranial fluid anywhere. Brain weighed 59 oz. (more than one-fifth of the whole weight of the body). To the unaided eye its structure seemed natural; the grey matter was increased as much as the white; the corpora striata were very large. The consistency of the brain was natural, it was not toughened or hardened, and its specific gravity did not seem to be increased. The other organs were natural.

3. But in by far the greater number of dolichocephalae which I have examined the brain has not been larger than natural. Wherefore, in such cases, the brain does not fill the skull, and the space between them is occupied by water. The effusion is both external and internal; it seems to be passive, simply

filling up what would otherwise be a vacuum. Nor are there any signs of pressure upon either the skull or the brain. In these particulars this kind of hydrocephalus, or water on the brain, differs altogether from the active hydrocephalus I shall have to speak of hereafter, which is ventricular or internal, which dilates the skull by equal pressure in all directions, into a sphere; and which also compresses the brain.

Now most, if not all, of these children are rickety; indeed, this kind of dolichocephalus and hydrocephalus is peculiar to rickets. The earliest writers upon rickets knew this; for details upon this point I may refer to an article of mine upon rickets in the Hospital Reports for 1868. No satisfactory explanation has been given of this rickety head. I think we must be content with the simple assertion that the skull in rickets is often enlarged so as to be greater than is necessary for the brain, and the excess of space is occupied by water.

I will now speak of the manner in which the head is enlarged by inherited syphilis. It does so in two ways. First, the characteristic enlargement is due to extensive growth of the osteophytes described

by Parrot. The cranial bones, especially the frontal and occipital bones, become greatly thickened, it may be as much as two or even three centimetres. The big head, such as it is, is indicative, not of a cranial cavity larger than natural, but only of a thickened skull. Wherefore the enlargement of the head from this cause is never great. Secondly, the head of syphilitic children often possesses all the characters which I have just assigned to the rickety head, and I have always deemed these children to be both syphilitic and rickety, and have even gone so far as to believe that syphilis may be looked upon as a cause of rickets, but without the slightest disposition to assent to Parrot's doctrine that syphilis is not only a, but the, cause of rickets.

II. *Round Heads.*—In this kind of big head the shape of the skull is fundamentally changed; it ceases to be a pentagon, and becomes a segment of a circle. Cyclocephalus is the shape proper to ventricular hydrocephalus, a disease characterized by an active distension of the ventricles of the brain by water, and a much more serious disease than the passive hydrocephalus I mentioned just now as being

present in some rickety dolichocephalae. Hydrocephalus does not produce a round head after the fontanelles are closed and the sutures well united. Acute ventricular effusion, occurring in tubercular or purulent meningitis, does not produce a round head, even when the fontanelle and sutures are not closed; the pressure, we may suppose, does not last long enough.

Another well-known effect of active distension of the skull from within by fluid is the peculiar change in the position of the eyeballs with respect to the eyelids; a condition due to excessive obliquity and drawing-upwards of the orbital roof, and never associated with dolichocephalus.

Optic neuritis, going on to atrophy of the disks, is sometimes caused by hydrocephalus; especially when it sets in after the fontanelle has closed. When the head admits of distension, and becomes cyclocephalic, the optic neuritis is often absent.

Lastly, in extreme hydrocephalus, the head is sometimes seen to be translucent in a strong light, such as that of the sun.

IV

APHASIA

If we read the writings of the ancient physician, Sextus Empiricus, we find that aphasia was a word much used by the new academic and sceptical philosophers. But they denoted thereby rather unwillingness than inability to speak. We, on the other hand, mean by aphasia inability to say what we wish to say.

What do we understand by the word 'saying'? 'Is not thought the same as speech, with this distinction, that thought is the unuttered conversation of the mind with herself, and that the stream of thoughts which flows through the lips and becomes audible is called speech?' (Plato). Hobbes adopts Plato's teaching thus: 'The general use of speech is to transfer our mental discourse into verbal, or the train of our thoughts into a train of words.'

Another truth which seems to have been perceived by the Greeks even before they began to philosophize is this: that, in the case of speech, the thought is a word. *Logos* means both thought and word, one notion regarded under different aspects. 'The logos which is a thought so long as it dwells within the breast becomes a word so soon as it is uttered (outered) or comes forth' (Plato). Or, as Hobbes puts it in his sarcastic way: 'The Greeks have but one word, *logos*, for both speech and reason; not that they thought there was no speech without reason, but no reasoning without speech.'

Aphasia implies a breach in the procession from within to without; the indwelling word cannot be uttered; the stream of thoughts is interrupted before it pass the lips: the mental discourse cannot be transferred into verbal: the train of thoughts cannot become manifest as a train of words.

So much for what aphasia is; now for what it is not. I. It is not defect in the unuttered word, that is to say:—i. Aphasia is not loss of memory for words; this is amnesia, forgetfulness, a form of dementia. Aphasia implies no mental defect, al-

though, of course, aphasia and dementia may be combined. ii. Congenital inability to speak from idiocy or deafness (deaf-dumbness) is not aphasia: the unuttered word is wanting. II. Aphasia is not defect in the articulation of words: although of course the two conditions may be combined.

The man has words in his mind, and he can articulate words, yet he cannot speak or cannot speak properly, he cannot utter words or utters wrong words: this is aphasia.[1]

What is the nature of aphasia: to what more general term can we refer the species? Aphasia is a species of paralysis: paralysis of the special movements of speech. In uncomplicated aphasia the muscles employed in speech are not paralysed excepting for speech. Compare bulbar paralysis: in this disease, the speech often becomes quite unintelligible; but the muscles are paralysed for all movements, swallowing, blowing, whistling and the rest.

Aphasia is either acquired or congenital. I. Ac-

[1] Cicero translates aphasia by the word *infantia*: 'Infantia dicitur quum quis rem aliquam novit et eam dicendo non potest explicare.' Stephanus, *Thesaurus Ling. Latinae.*

quired aphasia is connected with permanent disease of the brain or not. 1°. Concerning the permanent changes in the structure of the brain which induce aphasia, I will say no more than that it is quite possible for the aphasia to pass slowly away although there may be good reasons for believing that the damage done to the brain is permanent. 2°. But aphasia sometimes lasts so short a time that we may infer that the corresponding cerebral disorder has been equally temporary.

i. Temporary aphasia is very prone to occur in persons who are subject to migraine. A surgeon, liable to migraine, went on business out of town, and passed many hours without food. Returning by railway and crossing the Thames, he was asked by a fellow passenger for the name of some place they saw from the bridge. My friend, to his great surprise, found that he could not speak. When he reached the terminus he called a cab, but could not tell the driver whither to go. However, he managed to direct the man with his umbrella, and came straight to my house. He was much alarmed, but by the time I saw him the aphasia, which lasted

about half an hour, had passed away. He lived some years after this attack, and never had another.

A surgeon, prone to migraine, had three attacks of temporary aphasia, each lasting half an hour. Soon after the beginning of one attack he tried to write a letter: the result of his attempt he gave to me. He told me that 'he was able to speak pretty well at the time; anyhow, to make himself easily understood. The only other fact that he remembered during the attack that struck him as curious was, that he could spell out loud many words that he could not say, and yet he could not repeat the alphabet farther than D.' His letter ran thus: 'Dear you can. Pleaearue you can give to if you can some if you can come in come again some time aphasia agaain.' Here he left off, for he knew that he was writing nonsense. One or two other similar instances make me think it probable that the aphasia of migraine is mostly accompanied by agraphia.

ii. Emotion. A gentleman, sixty-five years old, had two attacks of temporary aphasia, with a short interval. I saw him during his second attack: he had been for a long walk, and had come home very

tired, when, for some reason or other, he flew into a great rage with his butler. While he was yet scolding the man he lost the power of speech. The aphasia passed slowly away in the course of two or three days.

iii. It is well known that an epileptic fit is sometimes followed by aphasia, either alone or associated with right-sided hemiplegia or monoplegia. iv. Aphasia has been known to follow the use of certain drugs; for instance, santonine. v. Whether the dumbness of hysterical persons be a case of 'cannot speak' or 'will not speak' is a question which may be left unanswered until the essential nature of hysteria has been determined. vi. The aphasia which sometimes follows typhoid fever, though temporary, lasts more than a few days.

II. Congenital aphasia is a curious and rare disorder. It must be carefully distinguished from idiocy, and this cannot always be done without repeated examination of the patient, and some little delay. In a doubtful case we should remember that the affection is much more likely to be a somewhat uncommon form of a common disease, dementia, than

to be an instance of that very uncommon condition, congenital aphasia. The pretty story which Herodotus tells about the son of Croesus is well known. The lad was dumb and suddenly acquired speech when under the influence of strong emotion. The faculty thus aroused was permanently retained. From time to time similar cases have been recorded, and there seems to be no reason for doubting the occurrence of the fact. The same sudden recovery of speech under emotion has been observed in cases of acquired aphasia: and it is an interesting reflection that powerful emotion sometimes promotes eloquence and sometimes takes speech away; sometimes causes aphasia and sometimes cures it.

V

THE MEANING OF THE WORD DELIRIUM

We may gain from etymology a clear insight into the meaning of the word delirium. 'Etymologies are no definitions, and yet when they are true, they give much light towards the finding out of a definition' (Hobbes). The Latin word *lira* signifies a balk or ridge of earth raised by the plough: the verb *liro* signifies I plough; and ploughing is or ought to be straight and right. *De-liro* signifies, I plough awry; and from *deliro* is derived the word delirium.

With respect to the actions of men, we set up a standard, rule, or notion (founded upon common sense or opinion) according to which a man may act and be deemed in his right mind. To deviate from this standard is to be delirious, to *wander* in the mind.

Delirium implies failure of the mental powers, but not of all these powers. Just as in falling asleep, one

faculty slumbers after another, and not all at the same time, so delirium indicates partial failure of mind. Reason, which is 'the power of judging aright, and of distinguishing truth from error', slumbers; and the other faculties, being uncontrolled, run riot. (1) Imagination tends to be especially active; delirium of this kind has a close resemblance to dreaming. The patient perceives phantoms or alucinations, and cannot distinguish them from true and trustworthy appearances. These alucinations relate to any of the senses; to touch perhaps most seldom of them all: sights, sounds, smells, tastes, all may be delusive, and especially sights. The mere perception of phantoms does not constitute delirium: if the patient know them to be phantoms, apparitions, visions, and rate them at their proper value, he is not delirious. But if reason (the ruling or hegemonic power) be weakened, when phantoms appear, the patient believes in them, and delirium follows.[1]

[1] 'All power of fancy over reason is a degree of insanity; but while this power is such as we control and repress, it is not visible to others, nor considered as any deprivation of the mental faculties; it is not pronounced madness but when it becomes ungovernable, and apparently influences speech or action.' Rasselas: chap. 44.

(2) The passions also are unusually manifest, being unrestrained. The dictum of Hobbes, that 'madness is nothing else but too much appearing passion', would be more accurate if thus expressed: that too much appearing passion is a sign of madness: 'ira furor brevis est.'

What coma is to sleep, delirium is to dreaming; for 'delirium is a dream arising from disease' (John Hunter). In both dreaming and delirium, reason slumbers. A dreaming person can be roused to full and lasting wakefulness; a delirious person can be roused but incompletely, and for a short time, or not at all. Just as the dreamer is only half asleep, so delirium is a state midway between consciousness and coma, that is to say, the reason (primum dormiens), is already comatose. Thus delirium often precedes, and sometimes follows coma.

Madness is the English word for delirium; but madness has come to mean lunacy. The distinction between lunacy and what is commonly called delirium is founded upon practical considerations. When delirium is habitual, so that the patient is always mad, or is liable to frequent outbreaks of madness,

we call it lunacy and subject the person to special laws and treatment.

Delirium when attended by fever constitutes phrenitis or brain fever. The Greek word phrên (or rather its plural, phrenes) signifies mentis sedes, the seat of mind. It seems to be a natural instinct of mankind, in an early stage of knowledge, to deem the praecordia, that is to say, the parts where the heart can be felt to beat (and especially the pit of the stomach or epigastrium) to be mentis sedes. Hence the use of the word phrenic as relating to the diaphragm; and hence, in some of the Hippocratic writings, phrenitis is classed among diseases of the abdomen. The Hebrew phrase, 'an understanding heart,' and the old English phrase, 'wood-heart' (=woodness or madness), testify to the same ancient physiology. The Hippocratic treatise *De Morbo Sacro* marks the progress to later doctrine that the brain is mentis sedes.

Some people possess an original tendency to delirium, which is often the same thing as an inherited tendency to insanity. For an instance well known to occur: a woman will suffer from mania at

the birth of each child, several members of her family having been insane. But what is less well known is the fact that, in persons of this kind, not only serious disease, but very slight ailments may be attended by delirium lasting for a few days. I have known prolonged toothache, strong emotion, the fatigue of a railway journey, to be causes of temporary mania.

A disposition of much the same sort is that which consists in an extreme susceptibility to drugs which act chiefly upon the brain. Alcohol may make such persons not drunk, but raving mad. An injection of morphia may produce not sleep, but excitement and delirium. No drug acts more powerfully in this respect than cannabis indica: e.g. an unmarried lady, thirty years old, after taking ten minims of the tincture, almost immediately complained of a feeling of fire in the head, and of other strange alarming sensations, she not knowing what drug it was she had taken. Narcotic drugs act thus more frequently in women than in men. It is best to give morphia cautiously to a woman until it is known how she will bear it, and not to give hemp at all.

'When sleep puts an end to delirium, it is a good sign.'[1] Most true; but it is not always easy at first to say that what looks like sleep may not be supervening coma: and how great the prognostic difference; the one signifying recovery, and the other death.

[1] Hippocrates, Aphorisms, ii. 2.

VI

NERVOUS ATROPHY

(*Atrophia nervosa: Anorexia nervosa*)

THERE is a disease, almost peculiar to young women, which is characterized by great loss of flesh and of appetite for food. Richard Morton described this malady in his remarkable book on Phthisis. He used the word Phthisis in its original and universal sense, to signify wasting, consumption, atrophy of the whole body: and he distinguished the particular form of atrophy aforesaid by the special name of Atrophia vel Phthisis nervosa. In the Clinical Society's Transactions for 1874, Sir William Gull published a few instances of this disorder under the name of Anorexia nervosa, laying stress upon the loss of appetite rather than upon the loss of flesh. The name Atrophia nervosa seems preferable for reasons which will appear at the end of the paper.

When the disease has lasted for some time, the patient becomes extremely emaciated, 'sceleti instar cute vestiti' (Morton), nothing but skin and bones. The repugnance to food is extreme, though we can hardly help suspecting that it is not so much a case of cannot eat as of will not eat, for there are no signs of indigestion. Constipation more or less obstinate is always present. The menses always stop. If the breasts are not fully developed they remain undeveloped. The blood circulates feebly, the hands and feet are cold and blue; some patients show a faint livid discoloration of the cheeks. In a few cases slight inconstant albuminuria will be found.

The disease is allied to insanity and occasionally ends in insanity. When we are allowed to explore the recesses of the family history we sometimes discover that certain relatives of the patient have been actually insane, or at least eccentric. Some of them may have been supposed, by their friends, to possess a genius.

Nervous atrophy affects young women about the age of puberty, or afterwards until they are about five and twenty years old. Moreover, the patients

are unmarried. But these three propositions concerning the sex, age, and unmarried state are not universally true. I never saw a more marked instance of nervous atrophy than in a boy eleven years old, and the like symptoms occur in still younger children, boys or girls. In a girl three years old, the aversion to food was associated with that depraved appetite which is called pica; she would eat coals, plaster, or mud.

In young women the mental disorder takes on the form of melancholy, which is no more than a high degree of the melancholy which affects so many girls about the age of puberty and for some years afterwards. The melancholy seems to arise from a morbid excess of that craving for sympathy which is common to all mankind, as is especially strong in the female sex. A young maiden, with small experience of the world, expects more from life than life can give: the sympathy desired is not forthcoming; hence dissatisfaction and discontent. In the extreme degree of this melancholy, the patient suffers from perverse conceits and strange notions. She thinks that people take not sufficient notice of her, she thinks that she

is misunderstood, fancies that she is censured or judged hardly. She becomes irritable and passionate, envious and jealous, timorous and sad; she feels a sort of indescribable dread, yet dread of nothing in particular; she is without hope of better fortunes, thinks she has not long to live, almost wishes for death. One of these girls, when she was alone in the drawing-room, was overheard to tell her parrot that she was not much longer for this world.[1] Lost in her museful mopings, she takes delight in nothing and loves to be alone, though solitude does her more harm. In short, she becomes highly peculiar.

Her perverse notions sometimes relate directly to food. The girl thinks that people can live without food. One young woman thought that it was wrong to slaughter animals for food, and tried to regulate her diet accordingly; a delusion which was not found out until I suggested to her mother that she probably had odd notions. Sometimes the girl will think that exercise is very necessary and will take long walks

[1] Look at the first woodcut in Sir William Gull's paper for the portrait of a young woman, seventeen years old, the very picture of pathetic resignation, worthy of a mediaeval saint.

far beyond her strength, or she will try the eccoprotic powers of leaping and dancing in her bedroom before daybreak, until the awakened household protest against the continuance of such preposterous therapeutics.

In the last stage of nervous atrophy the patient resembles a person dying from some form of tubercular disease. Indeed tubercle is often suspected in these cases, but inasmuch as any local signs thereof are absent or very doubtful, the tubercle is supposed to be latent. The patients are apt to become slightly febrile. Anasarca sometimes occurs, especially in the legs, hydrops tabidarum. Should the patient die, a post-mortem examination will reveal no anatomical explanation of the disease. But death is an uncommon termination: if the nature of the malady be recognized and appropriate treatment be adopted, most patients will slowly recover and at last regain their former health. Recovery cannot be deemed complete until the menses have regularly appeared.

There is yet an intermediate result, the patient neither recovers nor dies. I once saw the daughter of a small tradesman; she was forty years old, and

had lived all her life at home, with nothing to do. For twenty years she had suffered from marasmus and anorexia steadily increasing. Her menses had ceased for three years. She was bed-ridden and extremely emaciated: the loathing for food was extreme. I was told that she took no more food in a week than a healthy child four years old would take at one meal. There were no signs of any local disease. She was full of aches and pains, was very costive, and very sleepless. But she had never been properly treated.

Should such a case as this become the topic of gossip in a neighbourhood of ignorant and silly people, the patient may attain to the notoriety of a fasting girl. To credulity on the part of the public is now added imposture on the part of the patient, and nothing more is necessary. Vain were it to waste words upon these deplorable exhibitions of folly[1]: I prefer to entertain the reader by quoting from a letter written by Thomas Hobbes; a fine sample of the powerful, keen, contemptuous, and sarcastic humour of the man.

'The young woman at Over-Haddon hath been visited

[1] See Robert Fowler: Complete history of the case of the Welsh fasting girl (Sarah Jacob). London, 1871.

by divers persons of this house. My Lord himself hunting the hare one day, with other gentlemen and some of his servants, went to see her on purpose: and they all agree with the relation you say was made to yourself. They further say on their own knowledge that part of her belly touches her back-bone. She began (as her mother says) to lose her appetite in December last, and had lost it quite in March following: insomuch as that for the last six months she has not eaten or drunk anything at all, but only wets her lips with a feather dipt in water. Some of the neighbouring ministers visit her often: others that see her for curiosity give her money, sixpence or a shilling, which she refuseth, but her mother taketh. But it does not appear they gain by it so much as to breed a suspicion of a cheat. The woman is manifestly sick, and 'tis thought that she cannot last much longer. Her talk (as the gentlewoman that went from this house told me) is most heavenly. To know the certainty there be many things necessary which cannot honestly be pryed into by a man. Whether any excrement pass, or none at all. For if it pass, though in small quantity, yet it argues food proportion-

able, which may, being little, be given her secretly. Whether no urine at all pass; for liquors also nourish as they go. I think it were somewhat inhumane to examine these things too nearly, when it so little concerneth the commonwealth: nor do I know of any law that authoriseth a justice of peace, or other subject, to restrain the liberty of a sick person so far as were needful for a discovery of this nature. I cannot therefore deliver any judgment in the case. The examining whether such a thing as this be a miracle belongs I think to the Church.' 'From Chatsworth: October 20, 1668.'

Although nervous atrophy is a malady most incident to maids, yet it is occasionally seen in young married women who are left much to themselves; their husbands being from home all day at business.

In the treatment of nervous atrophy the first thing to be done is to secure the confidence of the patient's friends, and to persuade them to allow her to be put under the care of strangers, away from home. Indeed the treatment is essentially the same as that which bears the name of Dr. Weir Mitchell. When separated from their relatives, these girls and boys can gradually

be persuaded to take food enough. They must be fed at regular intervals: the frequency of feeding depends upon the amount taken at a time: at first the food must be put into the patients' mouths, if they lack energy enough to take it themselves; moreover, any solid food should be so prepared as to need no chewing.

But even when they take their food, it by no means follows that they soon recover. It may happen that the marasmus, constipation, amenorrhoea and melancholy continue: a manifest proof that the disease is not the result of mere anorexia. In a case of this kind, even a long holiday of travel through foreign lands did not suffice to bring about a cure. Soon after the patient's return her father was suddenly attacked by a serious illness. She had been the old man's darling, but now, all the solicitude of the family being diverted from her to him, she made a rapid recovery.

Relapses, so far as I know, do not occur.

VII

SPINAL MYALGIA

DISEASES which consist in pain, and in little or nothing but pain, place us almost wholly at the mercy of our patient; we can do little more than register what he or she tells us; we have few means of putting the accuracy of these statements to the test. Yet some sort of test is very necessary, because these painful affections occur for the most part in women; and women who suffer thus, usually suffer at the same time from another disorder which is the main cause of our difficulties, I mean an uncontrolled disposition to exaggerate. Uncontrolled, and sometimes I suppose, uncontrollable; we do not believe that they all lie wilfully; but the result, so far as we are concerned, is just the same as if they did.

It commonly comes to this. You visit your patient with a candid mind, desirous to hear what she has to

say, as in duty bound, so that you may afterwards do all the good to her our art can do. But you soon find that the more patient and attentive you are to the story, the more does it lengthen; there seems no end thereof in view; it flows, and as it flows, for ever will flow on. In young women there is often the opposite difficulty; they are not too voluble; indeed they will vouchsafe no information at all; they reply to your questions in monosyllables; they roll the bedclothes round them, and resist all your well-meant endeavours to discover the nature of the malady. And yet you cannot help thinking that in this taciturn manner the intention of the patient is the same as that of her loquacious sister, namely, to exaggerate.

Your examination over, you prescribe the treatment. At this stage you must expect one of two results. Either your patient will never admit that you do her the slightest good; very likely she will give you plainly to understand that you have made her worse. Or you will find that as soon as you have dispersed one set of disorders, new crops arise, and your task seems endless. Moreover, you are told by those who are more constantly than you in the company of the

patient, that her conduct hardly tallies with her complaints. The question even arises whether hers is not altogether a case of imposture. But supposing that you dismiss this suggestion, yet there is so much about the patient which is not straightforward, that you are wearied with your vain attempts to get at the truth, and are glad to be rid of her.

In no disorder are these truths more apparent than in the female complaint which has been called an irritable spine. The word irritable used in this way means painful. An irritable uterus is a painful uterus. The term seems to have been introduced about the year 1820. Older terms, used in what is essentially the same sense, are rhachialgia and notalgia. As these Greek words signify, the disease consists in pain referred to the spine and back. There is pain and nothing else; nothing else discoverable during life, and no doubt nothing would be discovered on an examination after death. The pain constitutes the whole of the disease.

Now this would seem to be a very simple notion. Yet a conception of irritable spine which has widely prevailed is anything but simple; is indeed most

complicated, and for this reason. The earlier writers upon the disorder (Player, Brown, Darwall, Teale, and Griffin) considered this spinal pain to be due to an irritable, or irritated, or 'subacute inflammatory state' of the posterior roots of the spinal nerves, or even of the spinal marrow itself. Any other pains or disordered functions, which concurred with the pain in the back, and which could by any possibility be supposed to be due to disease of the spinal nerves, were attributed to the irritable spine. In other words, the irritable spine was thought to be the cause of a host of other aches and troubles. Symptoms such as these were thought to be dependent upon the spinal irritation, namely, a lump in the throat, palpitation, dyspnoea, spasmodic cough, gastralgia, nausea and vomiting, irritability of the bladder, or suppression of urine. No doubt these disorders sometimes concur with an irritable spine; but they are not the effect of it. Indeed some of the symptoms which have been supposed to be effects of irritable spine, are much more likely to be its cause; for instance, menorrhagia.

We will confine our attention to the simple notion of pain referred to the region of the spinal column.

There is pain, and nothing but pain; no reason to suspect disease of the vertebral column, of the spinal marrow, or of its membranes. The pain extends over the width or length of two or three vertebrae, seldom more. The most common situation is along the nape of the neck, or between the shoulder-blades; sometimes, but not often, lower down in the loins. The painful part is tender to pressure made upon or alongside the spinous processes. The overlying skin is often tender. Application of heat or galvanism has the same effect—produces pain. But, at this point of your examination, you must distinguish two cases.

Sometimes, if you follow the course of the sensitive nerves which emerge from the tender or painful spot, you will find other spots where the patient complains of pain, spontaneous or produced by pressure, in a nerve remote from the spine. This is neuralgia. And so you get an irritable spine in connexion with neuralgia of the cervical plexus, or cervico-occipital neuralgia; neuralgia of the brachial plexus, or cervico-brachial nerves; neuralgia of the intercostal nerves; and much less commonly in lumbo-abdominal, anterior crural neuralgia, and sciatica.

Sometimes you cannot make out any pain or tenderness in the course of the nerves which correspond with the spot of pain in the spine. There may be pain elsewhere, beyond that in the back, but there is no anatomical connexion between the two seats of pain. This kind of irritable spine was deemed by Dr. Inman of Liverpool to be due to myalgia: and I believe that he was right. By myalgia he meant muscular pain, pain referred to the tendinous extremities of muscles. Myalgia is closely allied to fatigue. Speaking generally, we may say that myalgia is due to one or both of two things: either the muscle is overworked, or the whole health of the patient is lessened, so that exertion which could be easily borne in a robust condition becomes overwork in the weak condition, even though the exertion be small. The muscles of the vertebral column are especially prone to be overworked, because 'there is scarcely a single motion of the body in which one or more muscles attached to the spinous processes are not brought into operation, and there is, therefore, throughout the whole day (except during absolute rest), a constant and unremitting strain upon the

fibres by which the muscles are inserted' into the spinal column. (Inman, *On Myalgia*, p. 226: a book which has not received the notice it deserves.) This spinal myalgia is increased by any movement which brings the affected muscles into play, and is diminished by any position which relaxes the muscles, for instance, by lying down perfectly still, or by artificial supports like stays.

Over and above the fact that women are not capable of so much muscular exertion as men, women are especially prone to myalgia of all kinds, by reason of menstruation, childbearing, and suckling.

I will now narrate an instance of irritable spine due to myalgia. A woman, aged forty-two years, married, has had eleven children, of whom four are now living, two were stillborn, and she has had one miscarriage. Patient is a cook at an hotel, she has been very much overworked, kept up late at night, and obliged to rise early in the morning. She complains of sharp darting pain in her back, between the shoulder-blades, which leaves a dull aching and tingling sensation, aggravated by movement, and especially felt over and near the spines of the first and

sixth dorsal vertebrae. She also feels a pain which follows movement in the muscles which extend the head. In the lumbar region there is a well-defined narrow band of pain (a feeling of tying tight), reaching from the spine of the second lumbar vertebrae to the crest of the ilium. A sharp, breaking pain is felt in the middle of the arm on raising it just before it reaches the level of the shoulder. On using her arms a pain is felt between the shoulders, on the opposite side to that of the arm used. The arm-muscles ache after use. A catch is sometimes felt in the epigastrium on taking a deep breath. She is fairly healthy and well nourished, complains of weakness, but chiefly of the pains in her neck and back. She soon improved.

This woman had an irritable spine, due to myalgia of the muscles attached to the vertebrae. I think that she exaggerated her sufferings, but the account she gave of her pains tallied too closely with our general notion of myalgia and irritable spine to justify us in supposing that she had no pain at all. If she were an impostor, she was deeply versed in the signs and symptoms of spinal myalgia.

In treating these myalgic people, the first thing is to see that they take food enough. Often they take very little food; especially if they suffer from concurrent nervous disorder of the stomach, atonic or flatulent dyspepsia, or cardialgia. But take food they must: if they cannot or will not take much at a time, they must feed often. A moderate allowance of alcohol, in form of stout, ale, or wine, may be reckoned as so much food. The muscles must have an opportunity of being well nourished, or your other treatment will do little good.

Secondly, the muscles should be rested. The pain is a kind of fatigue. The muscles of the neck and back cannot be rested unless the spine be supported in its whole length: the patient must lie on a couch, or recline in a very easy chair with a long, high back, and with elbows, so that the weight of the arms is taken off the spine. Yet here is a difficulty. A prudent man thinks long before he condemns a woman to the sofa. There is danger lest she may never rise from it, and so be a burden to herself and her friends for the rest of her life. Beware of insisting too much upon the repose of a couch; it were

far better that the patient should continue to complain of her pains. The best advice I can give you is that you should recommend a certain amount of reclining, and carefully watch lest your patient show signs of becoming a slave to the sloth of the sofa. With the better sort of women there is little fear of this: they prefer an aching spine to laziness.

Another means of resting the muscles which perhaps occurs to you, is well-fitting stays. But on second thoughts you will see that stays do not come high enough to support the head and shoulders; and it is here that spinal myalgia most commonly occurs.

Daily massage to the whole body, and especially to the muscles of the back, is a third point of treatment.

Pain is relieved by heat, and most effectually by hot-water douches (as hot as can be borne) to the painful part for a quarter of an hour daily. But douches require special apparatus which cannot be found in private houses, and not in many towns. Makeshift substitutes such as hot-water bags and tins, bran bags dipped in hot water, are less efficacious,

though useful. Belladonna, aconite, and turpentine liniments may be tried: also acupuncture of the most tender spots: and in bad cases subcutaneous injection of cocaine or even morphia; a secret not to be divulged to these painful persons.

Lastly, I think that patients who have once developed an irritable spine, seldom altogether lose it; or at least they will seldom confess that they are altogether free from pain in the back.

VIII

ON THE CAUSES AND FORMS OF BRONCHITIS[1]

SCATTERED through the Hippocratic treatises are frequent references to a doctrine that the brain resembles a gland and is the 'metropolis' for separation or secretion (words which have almost the same meaning) of cold and viscid humours. When these humours have accumulated in excessive quantity the brain purges itself by discharging them upon the lower parts of the body; a process called catarrh, defluxion, or distillation of rheum, pituita, or phlegm. In the name of the pituitary body we find a survival of this doctrine. The diseases which result from defluxion of rheum have, says Plato, 'many names, because the places subject to flux are manifold.' By

[1] Lecture given before the Royal College of Physicians.

the Hippocratic writers seven kinds of catarrh are enumerated; by the time of Celsus the number had been reduced to three. In the Salernitan verses these same three defluxions are enumerated, but the name catarrh is restricted to defluxion upon the lungs, catarrhus ad pulmones, pulmonary catarrh.

The change from ancient to modern doctrine is marked by a voluminous treatise in six volumes quarto, published between 1660 and 1664, and written by Schneider, whose name has been given to the Schneiderian membrane. We must admire the divine leisure of the times which could allow any man to write such a book or any man to read it. This change in the doctrine of catarrh was brought about partly by the progress of anatomy and partly by Harvey's discovery which sapped the authority of the ancients.

Since Schneider's time catarrh has denoted excessive secretion of more or less altered mucus from a mucous membrane. Hence Pulmonary Catarrh signifies a disordered function of the pulmonary mucous membrane, the result being an excessive secretion. The corresponding lesion of structure—

that is to say, inflammatory changes in the mucous membrane—is called Bronchitis, a word which was invented in 1814 by Dr. Charles Badham, and which has to a great extent superseded the old phrase of pulmonary catarrh. It is amusing to contrast the diminutive duodecimo of Badham with the gigantic work of Schneider. The use of the word bronchitis marks the predominant influence of morbid anatomy. Bronchitis and pulmonary catarrh although for the most part they denominate different aspects of the same disease yet do not exactly tally; bronchitis is not always catarrhal; for instance, it may be attended not by flux of mucus but by formation of false membrane.

CAUSES

Bronchitis is a disease of much interest for the English people, inasmuch as in our country a pulmonary catarrh is the commonest of disorders at all ages and in all ranks and conditions of life. In speaking thus of the frequency of bronchitis it is worthy of note that this opinion is derived from clinical experience, and that bronchitis is not a con-

dition which attracts much attention on the post-mortem table, where the severe forms only of the disease are recognized, or, indeed, one might almost say, can be recognized without much more minute examination of the bronchial tubes than they usually receive. When we ask why bronchitis should be so common we are led to consider the causes of the malady. Let us begin with the simplest case possible and seemingly the most intelligible.

A number of men are working in a room when a large carboy of fuming nitric acid is broken. They all flee. After a time a healthy young man, having tied a wet towel round his mouth, goes back into the room and opens the windows. Symptoms of bronchitis immediately appear, painful soreness down the sternum and dyspnoea, his voice remaining natural. Next day he has a harsh, dry cough and abundant small mucous râles all over both lungs; his temperature rises to 101·4° F., his pulse to 100, and his respirations to 56 in the minute. On the third day the temperature varies between 99° and 101°, the respirations fall to 44; the signs in the chest are much the same. On the fourth day the

temperature falls from 100° in the morning to the normal in the afternoon; the râles have almost disappeared. On the sixth day he is quite well.

Bronchitis, being an inflammation, presumes irritation of the mucous membrane, and in this case there was no reason for supposing that the irritation was originally due to anything besides the nitrous fumes, even if we admit the possibility that microbes might afterwards come to play their part upon a soil thus prepared for them. But the cause of bronchitis is seldom so simple as this.

Breathing dust has long been recognized as a cause of pulmonary catarrh: for instance, Ramazzini two centuries ago devoted several chapters of his book, *De Morbis Artificum*, to the diseases, chiefly pulmonary, which attend dusty trades. At the outset it seems to be necessary to distinguish between dust which is alive, and inanimate dust. Taking inanimate dust first, as being the less complex topic, we must again distinguish between dust which contains soluble constituents and that which does not.

Insoluble dust is, in most cases, of mineral nature, yet the air of a cotton mill is smoky with vegetable

dust. The bronchitis resulting from dusty trades is very chronic, insidious in onset and slow in progress. Insoluble dust is supposed to act as a merely mechanical irritant to the bronchial membranes, but can we say that any sort of dust is absolutely insoluble? And when we endeavour to look more deeply into the matter other doubts arise, as usual. We suspect that the tendency to bronchitis which prevails among workmen in dusty trades is often aggravated by intemperate habits in respect of alcohol and tobacco. Probably in some workmen there is an original disposition to suffer in this way, such as we see in many asthmatics, who are very sensitive to dust. Moreover, the dust of unclean and ill-ventilated rooms will be very likely to contain morbific microbes, and the irritation of the air-passages set up by inanimated dust will favour the operations of the many bacteria which are potent to cause bronchitis. It obviously would be very improbable that these microbes should swarm in impure air and should not be found in the upper air-passages of man. And thus, as a matter of fact, our mouths, noses, and throats harbour many morbific

microbes in a latent state; they are there awaiting a favourable opportunity for becoming active and virulent, when, to quote the Virgilian phrase of which Sydenham was so fond, 'Qua data porta ruunt.'

Although it is probable that inanimate dust is sometimes noxious by reason of its soluble constituents, yet it is not easy to point to many instances of this kind. The dust of ipecacuanha, which is often referred to, produces asthma rather than catarrh, but it may be that this is a distinction without real difference, should asthma be in essence no more than catarrh.

The topic of living animated dust follows in natural order. The best instances of this kind of dust is afforded by the pollen of grass, which seems to have been proved capable of causing hay fever in some susceptible persons, though that in which the irritant power of pollen inheres is not known. And the question is complicated by the fact that in a few persons the mere odour of roses and some other flowers seems enough to provoke catarrh, although, since the famous experiment of Dr. J. Noland Mackenzie, with an artificial rose, we have learned

how large a part in the production of such a catarrh can be played by the power of imagination. Moreover, the particles which convey the smell of flowers must be far too minute to be rightly called dust, and therefore we will not pursue the subject here, but only remark that hay fever affords the best evidence of that idiosyncrasy which predisposes to catarrh.

The catarrh which is caused by the living dust thrown off by certain moulds and fungi is sometimes a much more serious affair. The best known of these fungi is the dry rot of deal wood, merulius lacrimans. The disease it sets up is sometimes fatal. Beside the catarrhal symptoms indicated by the epithet 'lacrimans' there are signs of poisoning of the whole body. The fungus grows upon the mouth and fauces, whence we may assume that the morbific agent consists of living seeds which under favourable conditions will strike root in the human body, will increase and multiply, will become, in fact, true parasites, and poison us with their secretions.

Grass pollen is morbific, dry rot is morbific and parasitic, but they are only *accidentally* so; it is not the purpose of their life to cause disease in man.

But there are certain living particles, called microbes, which are *essentially* morbific and parasitic; which to the best of our knowledge are that and nothing else; which continue to exist by causing disease, and for that sole purpose, as it seems to us; which are morbific or nothing at all, because, being merely parasitic in animals, it follows that if these animals ceased to exist the microbes also would become extinct. Some of these microbes are found almost everywhere; they pursue the steps of men and are apt to attack us at all times and places. But some microbes thrive only under certain circumstances; the best known of these less universal causes of bronchitis are typhoid fever and influenza. In some forms of bronchitis the disease is local and expends itself upon the mucous membrane; the catarrh is protopathic. But in typhoid fever and influenza the case is different, the catarrh is deuteropathic and secondary to infection of the whole system. These two diseases are members of the great class of specific fevers, and we are compelled by analogical reasoning to believe that other members of that class which are still more powerful causes of bronchitis are also microbic in

nature, for example, measles and whooping-cough. How they cause bronchitis is a question not yet ripe for answer, meanwhile we assume that some irritant is conveyed to the mucous membrane by the blood.

We have now passed from the simplest to the most complex causes of bronchitis so far as our knowledge will allow, and yet by far the greater number of actual cases of bronchial catarrh remain unexplained. What is the explanation of a common cold? We can hardly doubt that chill by exposure of the body has often much to do with it, but how? Let us note that colds are seldom caught, as we say, in pure air; at sea, for instance; no matter how great the exposure. Let us note also that common colds are often contagious with an incubation period of about three days. You will remember the deeply interesting experience of the St. Kilda cold, a fact which seems to be well proven, notwithstanding the incredulity of Dr. Samuel Johnson, and which seems to show that persons who are not themselves suffering from catarrh may yet convey the disease to others, and that a cold past and gone confers temporary immunity. We have heard of late that upon some of

the small islands in Torres Strait the natives, until they took to wear clothes, were exempt from coughs and colds. But it is difficult to understand how the mere fact of clothing pure and simple can have been the cause of those disorders. It would seem to be more probable that the inhabitants have been infected by their clothes or other means, and that the catarrhs have been really due to the intruding foreigner who brought along with him his civilization and his diseases.

THE CATARRH

Of the signs which make bronchitis manifest in the living body the most important is the catarrh, the excessive secretion of mucus. We might expect that physicians would pay great attention to the sputa, and such has been the fact from the earliest times. A sharp distinction has been drawn, since Hippocrates at least, between transparent sputa and opaque sputa; chiefly for prognostic reasons based upon the old doctrine of the concoction of humours, opacity being the sign of maturity, and a stage which the secretion passes through before the catarrh

ends in recovery. This distinction being of such prime importance in the opinion of ancient physicians, it is remarkable that they had no words in use to correspond with their ideas. Phlegma, blenna, pituita, mucus, all these words were used haphazard to signify matter constituting the sputa, whether transparent or opaque. In truth, the distinction is not of great value; however true it may be of acute coryzal secretions that the mucous discharge becomes muco-purulent on the way to recovery, we do not always mark these stages in bronchitis even when acute, while in chronic bronchitis the distinction is of small importance, either prognostic or diagnostic. How common it is to see mucous and purulent sputa in the same spitting-pot; to see purulent sputa floating or lying in thin, transparent, colourless mucus: probably the different secretions come from different parts of the bronchial tracts. How common it is to observe that sputa expectorated at different times of the day are different in character, the secretion being, for example, nearly pure mucus throughout the day, but much more purulent the first thing in the morning after sleep.

PITUITOUS CATARRH

To the general rule that the distinction between crude and concocted sputa is unimportant there is one exception worthy of special note. Laennec, in his chapter upon pulmonary catarrh, has much to say concerning a form of catarrh which he calls pituitous. He uses the word pituita in a sense of his own; he makes it signify colourless, transparent, stringy sputum, frothy at the top, and which when the froth has been removed resembles water stirred up with white of egg. We must all recognize the truthfulness of this description. Louis compared the sputum to gum-water, Borsieri to soapsuds. It is to be wished that the word pituita be used to denote this kind of sputum only, because there is no doubt that the catarrh which Laennec calls pituitous does present peculiar characters.

He remarks that pituitous catarrh is symptomatic of other pulmonary diseases besides mere bronchitis, especially oedema of the lungs and miliary tuberculosis. With respect to oedema of the lungs let us note that the albuminous or serous expectoration

which occasionally ensues upon paracentesis for pleural effusion, and which depends upon acute oedema of the lungs, and which always brings danger and often death, has to the eye all the characters of pituitous flux. Testing the sputa can alone distinguish the two: serous expectoration is highly albuminous; pituita is not albuminous at all. With respect to tubercle let us note that not only miliary tuberculosis, but also massive grey tubercular infiltration, may be attended by pituitous expectoration.

Besides pulmonary oedema and tubercle there are two other diseases of the lung which are often attended by pituitous expectoration; namely, the congestion which is consequent upon a dilating heart and contracting cancer.

Pituitous catarrh is sometimes idiopathic; a word which we need not fear to use provided we attach a definite meaning to it. The original and etymological meaning of the word is its true meaning, and pituitous catarrh is idiopathic when it constitutes the whole of the disease. It is sometimes acute, sometimes chronic, and in either case is a very serious condition. The acute catarrh occurs at all ages and

often in persons perfectly healthy, who have shown no previous tendency to pulmonary disease. The secretion rapidly becomes so profuse that it puts life in jeopardy, and will sometimes even kill by suffocation in a day or two. Yet for the first few hours the attack resembles a common cold with cough, and there are no peculiar symptoms attending the earliest stage which enable us to foresee that we have to do with the beginning of so formidable a disease. It does not always kill; sometimes it runs the course of ordinary severe bronchitis and ends in recovery.

Chronic pituitous catarrh is more common. It is serious on account of its obstinacy. To Laennec's admirable description of this disease there is nothing to add unless it be to say that it does sometimes attack persons in the prime of life. A Japanese, twenty-five years old, came over as a ship's steward to England, and immediately upon his arrival began to suffer from shortness of breath and cough; a new thing for him. After these symptoms had lasted for fourteen weeks he was admitted to the hospital. There were much dyspnoea and most abundant expectoration of pituita. Tubercle bacilli were not found. The physical signs

were those of severe bronchitis. For days together he seemed about to die from suffocation, but under very careful treatment he improved until, without any obvious cause, the symptoms recurred in full severity. Another improvement was followed by another relapse, and more than four months had passed away since his admission ere he could be discharged fairly convalescent. This was on May 8; but on June 16 he was readmitted with all his former symptoms; he went out on July 16. On December 5 he was admitted once more, and the time of the year was probably the reason why we could not get rid of him till February 25. He had now been a patient on and off for more than a year, and as there seemed no end to this sort of thing the sister of the ward got up a small subscription and shipped him off to the antipodes.

PECULIAR KIND OF BRONCHITIS

There is a form of disease which may justly claim to be called catarrhal, if we use that word in its strict etymological sense. Graves, speaking of the condition referred to, says: 'When an old person reduced by

some previous disease catches cold and gets in consequence a sudden and remarkable hoarseness so that he can only speak in whispers; when in addition to this he has cough, stridulous breathing, and copious muco-purulent expectoration, you may be sure that the case is a bad one and the patient in most imminent danger.' He goes on to say that the disease is accompanied by considerable fever, and that he did not recollect that he had ever seen an attack of this kind that did not terminate fatally. He narrates the case of an eminent country practitioner who 'had got an attack of cold followed by hoarseness, which went on for two or three days without being attended to, until one evening he suddenly became alarmingly ill. He was found to be labouring under hoarse breathing, constant laryngeal cough, prostration of strength, and enormous muco-purulent expectoration. His pulse was very rapid, he complained much of oppression of the chest, and he died on the following night, more with symptoms of exhaustion than of asphyxia.' Graves tells of another similar case in which the 'breath became exceedingly foetid. The expectoration also exhibited a very remarkable change; it was

greenish, ichorous, and had a most intolerable foetor. He now began to manifest symptoms of awful prostration; his distress of respiration became intense, his eyes fixed, his extremities cold, and he expired in about forty hours from the commencement of the attack.'

But this form of bronchitis sometimes occurs in old people whose health has certainly not been 'reduced by some previous disease'. I saw a lawyer, seventy-four years old. He was in good health when one April, while waiting for a train at Wimbledon, he was exposed to a chilling east wind. Next day, April 8, he lost his voice. On the 9th his breathing became a little affected and swallowing was very painful. His voice was not much more than a whisper. Seen by the laryngoscope, the epiglottis was very red but not much swollen; the ary-epiglottic folds were not swollen; the glottis was widely open and through it there welled up much muco-pus. On the 10th he seemed better in all respects. He expectorated much brownish muco-pus, which, both in colour and smell, reminded one of the sputum of gangrene; this phlegm came up with the least possible effort, hardly amount-

ing to cough. The laryngoscope showed that the redness of the epiglottis was less and that there was no swelling whatever. The voice was much louder. But during the night he became worse; fever appeared for the first time, and he complained of pain in the left side. The laryngeal symptoms were gone and his voice was natural, but his breathing became very frequent, and he died at evening on the 11th. The foetid expectoration calls for remark. Graves assumes that in his case the lung had mortified, but he gives no proof of this, and in my case the foetor occurred within forty-eight hours from the beginning of the illness, in a man previously healthy. Gangrene would hardly set in so rapidly as this. To suppose, in the absence of post-mortem examinations, that the smell is due to decomposition of the secretions (to a foetid bronchitis, in short) would seem more probable.

Disease of this kind is not peculiar to the old. Some years ago I saw a boy, aged seven years. The patient had been seized a day or two before with laryngeal symptoms which, when I saw him, deserved the name of croup, and the dyspnoea became so urgent that tracheotomy was demanded and performed. We

could see that the epiglottis was not swollen, but we could make out nothing more, for examination by the laryngoscope brought on vomiting. The dyspnoea was somewhat relieved, but the boy died a few hours after the operation, with all the signs of pulmonary dyspnoea. The only part which we were permitted to examine post mortem was the larynx; its mucous membrane was exceedingly red, but there were no false membranes and no oedema, nor were false membranes expectorated or seen during life. The laryngitis was a part (but at first the most obtrusive part) of more widely diffused inflammation. When tracheotomy set the laryngeal symptoms aside the bronchitis became manifest. Moreover, in this case there was no reason for suspecting measles. The analogy of the early laryngitis stridula of that disease will occur to your minds at once.

It is likely that the disease in question is essentially of the same nature as oedema glottidis; that is to say, a specific inflammation spreading rapidly, like erysipelas. Hippocrates uses this very word, and in several places speaks of erysipelas in the lung, but to identify the disease thus designated by him is not easy.

DYSPNOEA

To breathing with conscious effort we give the name dyspnoea. It arises from a peculiar sensation which is not always of the same kind. Two sensations at least can be distinguished. One is sensation of want of breath and impels to inspiration; another sensation impels to expiration. The feeling of want of breath arises within the chest and seems to involve all the thoracic organs. The feeling which impels to expiration seems to arise from the windpipe; that is to say, a patient suffering from expiratory dyspnoea will refer this feeling to the manubrium sterni and region of the trachea. This tracheal sensation closely resembles the feeling which impels to cough, and it is the cause of that expiratory groaning which is so common during the uneasy sleep of patients suffering from bronchitis, emphysema, or heart disease. I do not refer to snoring or stertor, which are inspiratory noises. Thus medical physiology requires two respiratory centres, one for inspiration and one for expiration.

It has been said that, in bronchitis attended with

laborious breathing, the chief difficulty is in inspiration; that the expiratory act, on the contrary, is always accomplished with comparative ease; and that these phenomena of laborious breathing, particularly the long-drawn, exhausting, inadequate inspiration, are probably quite peculiar to obstructive bronchitis. But surely these propositions are far from being universally true. Even in slight bronchitis occurring in a man, who never had bronchitis before, the expiration may be much more forced than the inspiration, in consequence of the provoking tracheal sensation spoken of before. In chronic bronchitis, when the patient raises phlegm with difficulty, the most obvious thing about the respiratory movements in many cases is the forced expiration. If we would see inspiratory dyspnoea in its highest degree and purity, it is not to bronchitis, but to laryngitis, that we must look; to angina laryngea, not angina bronchialis. In mere bronchitis we seldom see anything like the inspiratory dyspnoea of croup.

LIVIDITY

Lividity is not a marked symptom of bronchitis except in the worst cases. When we see a patient whose dyspnoea amounts to orthopnoea, and whose lips are purple or almost black, we suspect at first sight disease of the heart rather than disease of the lungs. Again, if we see great lividity in a case of bronchitis we suspect some complication, for instance, pulmonary emphysema, extensive collapse, broncho-pneumonia, scattered tubercle, or distended heart.

The phrase, *Suffocating Catarrh*, has been used in senses so varied that some persons have suggested that it should be wholly discarded. Even apoplexy and croup have borne that name. We can continue to use it only on condition that suffocating catarrh shall signify bronchitis in which the patient is in danger of being stifled by bronchial secretion thrown out more rapidly than it can be expectorated. The metaphorical phrase, paralysis of the lungs, has been applied to these cases of catarrhal infarctus. We meet with suffocating bronchitis under three conditions. First, in infants; and a main cause of their liability to suffocating

catarrh is to be found in the shape of their thorax which, being almost circular on horizontal section, is incapable of more than small lateral expansion. The only extraordinary enlargement which their chest can undergo is by vertical elongation, upwards by means of the accessory inspiratory muscles and downwards by excessive diaphragmatic contraction. Moreover, their ribs are often soft and rickety. Next, we meet with suffocating bronchitis in adults when they are attacked by pituitous catarrh in a severe degree. And, thirdly, suffocating bronchitis is common as an exacerbation of chronic bronchitis in persons who are for the most part advanced in life.

In these cases, post mortem, we often find that form of *Pneumonia* which bears no name adopted universally. Our own 'Nomenclature' gives us the choice of three names. We may use the name lobular pneumonia, in contradistinction from lobar pneumonia; or broncho-pneumonia in contradistinction from pleuro-pneumonia; or catarrhal pneumonia in contradistinction from what has been called croupous pneumonia. The name of broncho-pneumonia is to be preferred. Croupous pneumonia is what Polonius

would have called a very vile phrase. It is amusing to note how the Lowland Scotch word croup (the cognate English word is roup) which signifies a certain kind of noise, has come to be applied to a morbid exudation; a perversion due to foreign pathologists who could not have known the meaning of the word which they were using or abusing. And thus croup, having undergone this strange metamorphosis in the course of his travels abroad, comes back disguised to his native land, and we receive him with open arms. Such are English ways.

Broncho-pneumonia is the last stage of inflammation extending downwards along the air-passages into the pulmonary lobules. Catarrh implies a mucous membrane; but the bronchiola, which feed the pulmonary lobules with air, possess no mucous membrane; in these parts, therefore, lobular hepatisation takes the place of bronchial catarrh. The difference in the products of exudation depends more upon the situation of the disease than upon any difference in its cause. One very practical truth has been well established, namely, that in measles the frequency with which broncho-pneumonia occurs is dependent

upon the degree of impurity in the air breathed. The main cause of death in measles is broncho-pneumonia, and the mortality in some epidemics has been as high as fifty per cent. Thus any mysterious change of type or epidemic constitution seems to be resolved, so far as concerns measles, into the condition of the air breathed by the patients. Hence the necessity for isolation, for ventilation, and for cleanliness.

The pneumonic part of broncho-pneumonia is a post-mortem disease or, in other words, it can seldom be detected with certainty during life. In severe progressive capillary or suffocating bronchitis which threatens the patient with death we may assume that lobular pneumonia is present, inasmuch as it is the last stage of the disease. Neither symptoms nor physical signs help us much; the patient is too ill to bear prolonged examination; nor does it matter in the least whether we detect the pneumonia or not, for our treatment is the same in both cases.

CHRONIC BRONCHITIS

Chronic bronchitis associated with emphysema, and in all respects like the disease common in old people,

is by no means very uncommon in the young, that is to say, in patients under twenty years of age. But this is the case especially among the lower classes of the people; among the well-to-do, chronic bronchitis is uncommon in the young. When we bear in mind that with asthma it is quite the reverse; that juvenile asthma is common among the well-to-do and uncommon among the lower classes; the suspicion arises that we have to do with what is essentially the same disease assuming different forms under different conditions of life. The poor are very careless with regard to their health, and it is probable that, through neglect, what would otherwise be asthma becomes a chronic pulmonary catarrh.

The heart is dilated more easily in children than in adults, and thus cases of juvenile chronic bronchitis gradually pass into a state wherein the symptoms of dilated heart predominate over those of the original disease. Some years ago I examined the body of a boy, thirteen years old, who had suffered from chronic bronchitis since eighteen months of age, when he had measles and whooping-cough. He was so deeply cyanotic that the question of malformed heart arose;

his fingers were much clubbed and there was universal dropsy. The post-mortem examination showed emphysema of the lungs, especially of their anterior parts. The right side of the heart was much dilated and hypertrophied, but there was no valvular disease nor was there any malformation. The liver was nutmeg.

That predisposition which tends to make bronchitis chronic is often hereditary and is often acquired. In many persons a powerful assistant cause of the chronic bronchitis is alcohol. Sydenham alludes to this fact when speaking of 'peri-pneumonia notha', which no doubt for the most part consisted of febrile exacerbations of chronic bronchitis. He says that the disease 'affects those who are of virile age, or, what oftener happens, those who are older and who have been too much given to spirituous liquors, especially to brandy'. The evil effect of alcohol is sometimes seen in persons who cannot be justly called intemperate, and a marked diminution of the tendency to bronchitis will sometimes occur in patients who become total abstainers after having been in the habit of drinking not more than a usual quantity of wine. The swollen,

deeply red, and irritated soft palate of many hard drinkers probably affords a clue to the nature of alcoholic bronchitis.

Post-mortem examination of the bodies of persons past middle life reveals the fact that their chronic bronchitis is seldom unassociated with chronic nephritis, arterio-capillary sclerosis, chronic endocarditis or pericarditis or myocarditis, and atheroma of the aorta, not to speak of pulmonary emphysema; lesions which constitute an important part of the condition which we designate old age.

That a tendency to chronic bronchitis and a tendency to gout concur in many patients is a frequent experience, and there can be no objection to our expressing this fact by calling the bronchitis gouty, provided the evidence of gout be sufficient. But I fear that gouty bronchitis is often talked about when the evidence of gout is small. Before the term 'gouty' is predicated of any disease the reasons for the affirmation ought to be carefully examined. To define the word 'gout' is not possible; the essential nature of gout we do not know. Doubtless there are satisfactory criteria or notes of gout, such as regular

attacks in the hand or foot, tophi, and the discovery of uric acid in the blood. But medical men are often content with much lower probability than this, when they pronounce a patient to be gouty; and I am far from saying that they are always wrong. Howbeit the name of gout has been extended in meaning so as to include a vast number of diseases, but whether these speculations are as sound as they are ingenious, whether they are solid structures grounded on truth or no more than the phantoms of a lively imagination, I will not take upon myself to determine. Time will show. 'Medicina non ingenii humani partus est sed temporis filia.'

PHTHINOID BRONCHITIS

There is a form of chronic bronchitis which bears a close resemblance to tubercular pulmonary consumption; the disease is nothing but bronchitis, yet the symptoms are those of phthisis pulmonalis. The interest of this topic is mainly antiquarian for us, because it throws an important light upon the progress of pathology. Before the invention of auscultation, the patients alluded to were necessarily believed

to be suffering from pulmonary consumption, and, indeed, they were so suffering in the original sense of the phrase. For the epithet, consumption or phthisis, related to the condition of the whole body, to the progressive emaciation in fact, while the word pulmonary indicated that the disease, whatever it was, which caused the emaciation was seated in the lungs. In the phthinoid or consumptive form of bronchitis there is an abundant expectoration of purulent sputa. The early physicians knew of no source of pus but an ulcer, and hence they inferred that the lungs were ulcerated. The first man to discover that this was not the case was that singularly accurate observer, Antony de Haen; but even after he had shown that the lungs, examined post mortem, were to all appearance sound, free from all ulceration, and yielding not a drop of pus on section, yet matters were not much advanced for practical medicine, because the diagnosis could not be made during life. And here the subject stood until the time of Laennec. Sir Thomas Watson confesses in his lectures that he once made this mistake, and pronounced a young woman to be in the last stage of

consumption who soon afterwards made a rapid and complete recovery, he having omitted to auscultate her chest. Even auscultation does not always enable us to distinguish these cases with perfect certainty, but since Koch's discovery of the tubercle bacillus we have a potent auxiliary to diagnosis in the microscopic examination of the sputa.

CONCLUSION

In conclusion, we will revert to the results of our search into the causes of bronchitis. We found it to be highly probable that most catarrhs are due to a specific infection, and that they often depend upon contagion spreading from man to man. This doctrine has very important bearings upon medical practice. It leads us to believe that the means by which we may prevent catarrh are to be found in ventilation and cleanliness, if, indeed, ventilation be not a kind of cleanliness. Experience confirms this belief. When epidemic catarrh prevails where do we find most of our patients? In those houses which are obviously the worst ventilated, even though they be the spacious houses of the rich. And where do our patients catch

their catarrh? Either in houses of the kind which I have mentioned or in buildings where men most do congregate, especially in offices, shops, and churches. Large shops and stores, public museums and libraries, are ventilated as little as possible for fear of their contents being spoilt by smoke and dust. Many churches both in town and country are never properly aired for another reason, namely, because their architecture does not admit of it. Those 'rich windows which exclude the light' do worse than this, they exclude fresh air. The revival of Gothic architecture has been, like the mediaeval revival in general, a relapse into barbarism. Our despised forefathers of the eighteenth century erected plain and simple buildings which could at least be well-aired, well-lighted, and kept warm and comfortable; nay, even the much-ridiculed churchwarden, with his brush and pail of whitewash, was a praiseworthy minister of health. Modern dwellings are no better than the churches. In the matter of domestic sanitation people have fixed their attention too exclusively upon the drainage and the water-supply; light and air are not reckoned. Many of the large red-brick houses, which

have been built in great numbers at the West End of London and elsewhere, during the last five-and-twenty years, cannot be properly ventilated. The well of the staircase ought in every house to be a reservoir of pure air and to have an independent supply from without. But in many houses the staircase cannot be ventilated except through the rooms, and, in fact, it never is ventilated. Nor are the rooms themselves much better off: their heavily mullioned windows are designed with small regard to the transmission of light and air. The subsidiary and merely ornamental arts, which do no more than please the eye, are studied to the neglect of that far greater art which promotes the happiness and welfare of the whole man, the Art of Preserving Health.

IX

ON THE NATURE OF PULMONARY EMPHYSEMA[1]

In 1764 Dr. William Watson read before the Royal Society 'An account of what appeared on opening the body of an asthmatic person'. He described what he called an 'emphysematous state of the lungs', a condition which he deemed to be due to an 'extravasation' of air into the lungs from the 'bronchia and vesicular substance', and what was no doubt vesicular emphysema of the lungs in the sense which we give to that phrase. Pulmonary emphysema has been known in one of its results, namely, the barrel-shaped chest, from the time of the ancient Greeks. The lesion of the lungs themselves was first noted by Valsalva and Ruysch in the earlier part of the eighteenth century.

[1] Lecture given before the Royal College of Physicians.

However, Laennec was not far from the truth when, in the first edition of his great work published in 1819, he said that 'emphysema of the lungs, such as he had described it, seemed to him to be a disease hitherto unknown'.

It is universally agreed that the note of pulmonary emphysema is to be found in enlarged capacity of the acini and lobules of the lungs, beyond what can be produced in health by the deepest inspiration. This change in the structure of the lung, the anatomical characteristic of emphysema, is pretty thoroughly known; but when we come to inquire into the process which leads to emphysema the case is very different. For we cannot know the process in the same way as we know the result; we cannot watch the lungs becoming emphysematous; we can only argue about the process. Deprived of the intuition of sense, the light of nature, we must follow the light of reason and beware lest it prove to be ignis fatuus. And unfortunately we can get no help from experimental pathology; we cannot set up progressive emphysema in the lower animals and mark its stages in the same manner as we can set up inflammation.

Hence the many theories of emphysema and long discussions which, however, do not dishearten me from attempting the difficult topic once more ; my only fear is lest I should weary you.

ACUTE EMPHYSEMA

The emphysematous process, like all nature's processes, may be assumed to be complex, and we shall do well to begin by endeavouring to resolve it into its simplest elements. Nature itself helps us much by offering to our consideration a form of emphysema which certainly is simpler than ordinary emphysema, and which seems to consist in a mere over-distension of lung. I allude to the acute emphysema first adequately described by Fauvel in his essay upon capillary bronchitis. You know the condition: both lungs distended with air, as if insufflated by the fullest possible inspiration, but some parts of the lung distended more than this, emphysematous in short, and especially so in the upper lobes and their anterior portions. This acute emphysema is especially met with in young children who have died from suffocating capillary bronchitis or from diphtheritic croup. Many

of these children have enjoyed perfect health until they were attacked by the bronchitis or croup, so that there is no question in them of any preceding disease of the lungs. Suffocating bronchitis will often prove fatal within a week from its beginning; croup will kill in a still shorter time; and there is a disease, very much less common, namely, haemorrhage into the air-passages, which may suffocate in a few minutes, acute emphysema being found post mortem in all cases.

Croup. Let us turn our attention to croup in the first place, inasmuch as it is often entirely free from one condition which might complicate the question, namely, collapse of the lung. For although fatal croup is usually associated with abundant puriform secretion into the small air-tubes of the lungs, yet in spite of this form of bronchitis there is sometimes no collapse at all, even when the lungs have become highly emphysematous, so that collapse, when present, can be no more than somewhat contributory to the emphysema. In other words, the emphysema is but slightly, if at all, compensatory to any collapse. John Cheyne, in his book on the 'Pathology of the laryngeal and bronchial mucous membrane' published

in 1809, frequently alludes to the emphysema and puriform catarrh of croup. For example, he says: 'The lungs were so filled that they did not recede in the least when the thorax was opened; every surface which was cut poured out this puriform fluid from several points.'

Setting collapse aside, the conceivable causes of acute emphysema are two, namely, dyspnoea and cough; that is to say, the movements of dyspnoea and of cough, not overlooking the fact that they usually concur. Here also the question is simpler in the case of croup. In capillary bronchitis both dyspnoea and the cough are great, and therefore the question of the associated emphysema is complicated. But in croup the dyspnoea is extreme, while the cough is insignificant or even absent, so that it may be left out of consideration, and all this in cases affording a high degree of insufflation and emphysema of the lungs.

Our analysis thus leads us to infer that dyspnoea is the cause of acute emphysema. Now, the movements of dyspnoea are forced movements, inspiratory or expiratory, or both. But before proceeding further

with this part of our subject let us cast a short glance upon the movements of breathing in general.

Respiratory Movements.—From the earliest times the diaphragm has been regarded as the main agent of respiration. We may say of respiration, and not of inspiration only, because expiration is little more than a result of inspiration. Galen was the first to show that most of the intercostal muscles were ordinary muscles of inspiration. Guided by the researches of Duchenne, we may disregard the exceptions which Galen made, and we may say that all the intercostals act simultaneously and are employed in ordinary quiet inspiration. They not only raise the ribs, but keep the intercostal spaces tight, during the descent of the diaphragm. When the intercostal muscles are paralysed, but the diaphragm is not, the upper two-thirds of the chest are motionless.

The chest may be roughly compared to a bow, inspiration to a bow when pulled upon by an archer, and expiration is little more than the elastic recoil of the bow when the archer lets go the string. But the inspiratory muscles do not altogether let go when expiration begins, they continue to act as moderators

of the expiratory movements, and hence expiration is more gradual than it would be were it a mere elastic recoil. In short, the muscular contractions of expiration are persisting contractions of inspiratory muscles, unless the expiration be forced, and then extraordinary muscles of expiration come into play.

Physiologists seem to be agreed that although the outward pressure of the air at the mouth during expiration is greater than the pressure inwards during inspiration, yet the forces concerned in inspiration are decidedly much greater than those of expiration. These propositions at first sight seem to be discordant, but we are not called upon here to explain the apparent discrepancy, we will only remark that they indicate a provision in the human economy for repressing the greater powers of inspiration. Let us especially note that the elastic retraction of healthy lung is not satisfied by the deepest expiration, and that the lungs are provided with a considerable reserve of elasticity; so necessary is it to maintain sufficient deflation of the lungs, or in other words to keep them sufficiently empty of air. For if there be insufficient efflation there must be insufficient inflation.

Forced Breathing.—In the forced breathing of healthy persons there is the same disproportion between the powers of the antagonist movements. Physiological experiments relate to a few forced respirations studied in a healthy subject: but the forced breathing of disease introduces a new set of conditions, and requires that we proceed to an analysis. The extraordinary muscles of *Inspiration* are chiefly three: the sterno-mastoids, the scaleni, and the upper third of the trapezii. These muscles can be seen contracting during inspiratory dyspnoea. Other muscles there are which assist to some degree, but to enumerate them is not necessary. These extraordinary muscles act by raising the upper part of the chest and fixing it, so as to enable the ordinary muscles of inspiration to act with extraordinary power. The fixity of the clavicles and first ribs enables the intercostals to contract with their greatest power, and to elongate the chest in a direction upwards at the same time that the diaphragm elongates it downwards. Observation of the living patient shows us that forced inspiration tells chiefly upon the front part of the thorax above Harrison's furrow.

The extraordinary muscles of *Expiration* affect

another part of the chest. In a patient coughing violently we see the muscles of the abdominal walls, especially the recti, contracting so as to straighten and depress the front part of the chest below Harrison's furrow. The diaphragm, being relaxed, is necessarily driven upwards. If the largest air-tubes be obstructed by mucus or by partial closure of the glottis (as in the case supposed of coughing) it is very instructive to see how forced expiration dilates exactly the same part of the chest as that which is dilated by forced inspiration. Hence in diseases attended by cough or dyspnoea, the unfortunate upper and front part of the thorax has no chance; forced inspiration and forced expiration combine to keep it distended. Nature provides that the result of ordinary inspiration shall be fully countervailed by expiration; nature provides extraordinary muscles to reduce the distension of the lower part of the chest caused by forced contraction of the diaphragm, but nature provides no extraordinary means by which the injurious effects of forced inspiration upon the upper part of the chest can be repaired by forced expiration. On the contrary, both movements concur to the same end; or, in other words, no

muscular contractions can reduce over-distension of the upper chest, and if the inherent elasticity of the lungs and ribs cannot reduce it, nothing can.

Before leaving this topic let us repeat that we must be careful to distinguish between the voluntary forced breathing of a healthy person and the involuntary, instinctive, automatic forced breathing which attends dyspnoea. Voluntary excessive movements soon fatigue, but automatic breathing is not attended by a feeling of fatigue, and thus the extraordinary movements of dyspnoea can be continuously kept up for hours, days, or weeks; may we not say, indeed, for months or years? Moreover, let us note that this remark applies to the movements of breathing only, but by no means to those of cough; cough must be intermitting.

Acute Emphysema.—We will now return to the consideration of the acute emphysema of croup. In the living patient a very few hours of dyspnoea suffice to produce a marked bulging of the front of the chest above Harrison's sulcus. After the patient's death we find that the corresponding part of lung is the seat of a high degree of emphysema. The whole lungs are

insufflated or distended with air, but nowhere is the emphysema so marked as in the situation just indicated. This is the very part of the chest which is most expanded by forced inspiration, and which is expanded by forced expiration also in the case of cough, but expanded, let us note, by a different mechanism in the two cases. In deep inspiration this part of the chest-wall is expanded in the first instance, and the expansion of lung follows; whereas in forced expiration and in cough, this part of lung is expanded in the first instance and it drives the chest-wall outwards. The mechanism by which cough produces emphysema here has been explained by Sir William Jenner. The glottis is closed in preparation for a cough or for any great effort: forcible expiration follows; certain parts of lung are compressed, from which the air escapes, but not being able to pass the glottis it is driven into those parts of lung which are not compressed, especially the upper anterior parts so often mentioned. No doubt expiration under these conditions can produce emphysema in certain places, but in the case of croup, inspiration is by far the more potent agent, being incessant in its operation, whereas

cough is only occasional and sometimes there is no cough at all. Moreover, forced expiration cannot explain the highly insufflated state of the whole of both lungs, for the distension caused by expiration must be partial.

Defective Expiratory Power.—We are yet far from having reached a full understanding of the mechanics of acute emphysema. We have arrived at an extraordinary expansion of part of the lungs, but the essential cause of the expansion lies deeper than this. You will understand what I mean when I ask this question, Why does the expansion remain permanent? And I think that from what has gone before, the answer will readily come, Because nature has omitted to provide the thorax with muscles by means of which this acute emphysema can be prevented or overcome. The only means which nature *has* provided towards this end is the elasticity of the lungs and ribs, especially of the lungs, and this means, unfortunately, is inadequate. It is vain to object that physiological experiments prove forced expiration to be more powerful than forced inspiration, because these experiments deal only with the lungs as a whole and

cannot tell us anything about the respiratory powers of different parts of the lungs which is the very thing we want to know. Can it be thought for a moment that the expiratory power of the upper part of the chest is greater than the inspiratory? Certainly not.

The elasticity of the lungs, then, falls sadly short of what is required of it during an emergency of dyspnoea. How is this? Either the elasticity is defective absolutely, or it is defective only in respect of the increased demand made upon it, and probably both conditions concur; that is to say, the elasticity is called upon to do more than usual at the very time when itself is weakened and able to do less. In the first place, this unusual demand upon the pulmonary elastic recoil is due to the abnormal secretions in the air-passages, and the expired air has to overcome the resistance of these secretions, in addition to what is the only obstacle to expiration met with in health, namely, the atmospheric pressure. The elasticity has too small a reserve; it is equal to overcome the atmospheric pressure, but not much more. Inspiration, being the more important motor of the upper lung, can draw air past the obstructing secretions; of which air, expiration can

expel only a portion, and thus much air comes to be imprisoned in the parts which are, or which become, emphysematous. In the second place, the elasticity of the lung is probably damaged. We have already compared normal inspiration to drawing a bow, and it does not seem a very far-fetched similitude to compare the result of an enormous number of forced inspirations to a bow which has been overdrawn, bent, and crippled. The elastic recoil of the lungs is weakened. So far as I know no careful microscopic examination of the pulmonary tissues in acute emphysema has ever been made.

Summary.—And now to sum up the conclusions at which we have arrived. The feeble expiratory power of certain portions of the chest is a condition which predisposes the underlying portions of lung to suffer from acute emphysema in cases of Croup. Given this predisposition, the aforesaid portions of lung become over-distended in consequence of forced inspiration, or of forced expiration, or of both.

The acute emphysema of Suffocating Bronchitis will now be easily understood. This affection is referred to by Aurelian in his chapter upon peri-pneumonia

where he says that as the disease gets worse the chest becomes more protuberant. The causes of the emphysema are the same as in croup, but with this addition, that in peri-pneumonic catarrh, more or less collapse of the lung is common and tends to aggravate the distension of the rest of the lung, according to the mechanism explained by Sir W. T. Gairdner.

CHRONIC EMPHYSEMA

Acute emphysema is a condition which often ends in recovery. Chronic emphysema, on the contrary, is a progressive disease. Although it was first adequately described by Laennec it had engaged the attention of physicians long before his day, not, however, as a lesion found upon the post-mortem table, but as a disease of the living subject. Being looked at merely from the clinical point of view, emphysema was usually called asthma; for example, Heberden, speaking of what must have been chronic bronchitis and emphysema, says: 'When a constant cough has afflicted people in youth and adult life, in their old age they become asthmatic.'

Laennec tells us that there was a time when he

thought emphysema to be a very rare disease, but that afterwards he became convinced that it is common enough. Virchow supplies figures intended to show that emphysema is not common. In ten years only 0·3 per cent. of all patients admitted into the Charité Hospital of Berlin were admitted on account of emphysema; in only 0·6 to 0·7 per cent. of the bodies examined post mortem was emphysema the chief lesion found, and in only 5·5 per cent. was there any emphysema at all. The statistics of St. Bartholomew's Hospital yield these figures: in four years (1894–1897) 9,928 patients were admitted into the medical wards; 165 or 1·66 per cent. were believed to be emphysematous; 1,363 post-mortem examinations were made and emphysema was found in 154 bodies, or in 11·3 per cent. Our figures justify Laennec's opinion; a lesion found in 11 per cent. of persons dying in the medical wards of a hospital cannot be called uncommon.

Anatomy.—The anatomical sign of chronic emphysema consists in actual loss or atrophy of the lung tissues; yet many pathologists of the first rank have expressed a different opinion, namely, that there is a hypertrophy of lung tissue, either a hypertrophy

preceding the atrophy, or a local hypertrophy simultaneous with local atrophy. Laennec himself thought it highly probable that emphysema is usually accompanied by a certain degree of hypertrophy, finding that the lung feels firmer and less flexible when pinched between the fingers. Yet he recognized the associated destruction of tissue, as indeed such a man could not help doing when he examined emphysematous lungs in the manner which he recommends, namely, by inflating and drying them. Laennec's contemporary, Louis, was less sagacious: he admits no exception to his universal affirmation that emphysema implies increase or hypertrophy of lung tissue. When we ask how Louis detected the pulmonary hypertrophy we get no clear information: he seems to have done no more than adopt Laennec's methods, and to have examined the lung by pinching it and by drying it. These doctrines are not altogether incorrect, only we must express them a little more precisely. In the first place, emphysema in its earlier stages does not affect the whole lung, or does not affect it equally. And next, the great and extensive atrophy of tissue cannot be gainsaid in the case of emphysema in its

later stages, the lungs being examined according to Laennec's method; they feel, as he says, no longer firm and inflexible, but soft and downy and the loss of tissue is most obvious to the eye. Induration is a better name than hypertrophy to give to the abnormal firmness and rigidity of the alveolar walls, and this induration is always very partial and found only in the earlier stage of the disease.

The microscope has not yet disclosed any primitive tissue changes apart from mere atrophy, if such changes there be; and I need not refer to hypotheses, such as that of Rainey, who deemed the primary lesion of emphysema to consist in fatty degeneration of the alveolar walls; or that of Villemin, who described a sort of granulation of the connective tissue which supports the capillary network of the lungs; for in all probability what both these anatomists saw were degenerative changes in the epithelium; changes secondary to a preceding failure of nutrition, whatever the nature or cause of that failure may be. Other pathologists have supposed a primary affection of the capillary blood-vessels, or of the unstriped muscular fibres, or of the epithelium, but the truth

is that the earliest changes are very imperfectly known.

Causes of Chronic Emphysema.—We are thus led on to survey the great field of strife in the topic of chronic emphysema. There is rarefaction of the lung and there is destruction of lung. Does one cause the other? and if so how? And this is not all; we desire to look deeper still, and we ask how the primary defect (whether it be rarefaction or destruction) is brought about; to what is it due? In other words, What is the essence of emphysema? We wish if possible to witness emphysema in the making, and inasmuch as morbid anatomy can show us no more than the final result, we must discuss the subject from the clinical point of view.

Symptoms.—First, we will inquire what means we have for discovering the existence of emphysema in the living subject, and we are met at the outset by the fact that most of these patients suffer from manifest bronchitis also. These complex cases are not suitable for our present purpose; we cannot disentangle the symptoms of the two diseases so as to be able to say, This is due to emphysema and this to bronchitis:

whilst as to the physical signs of emphysema, there are none, excepting in advanced cases, which are always complicated with bronchitis. If we require instances of emphysema quite unattended by catarrh, such instances are not to be found. However, let us consider a case of marked progressive emphysema, in which the indications of bronchitis and catarrh are the least possible.

Progressive Dyspnoea.—A man, about middle life, begins to suffer from slight shortness of breath on exertion; he is short of breath, that is to say, the patient feels that he cannot inspire so much breath as he seems to need, in a sense like that in which we say that a man is short of money. His breathlessness increases slowly and insidiously, until his breath is always short; but no signs of dyspnoea, no laborious or extraordinary movements of respiration, are apparent so long as he is at rest, not until he makes some effort, such as that of talking or moving the body. In cases still worse, dyspnoea persists even when the patient is at rest. The dyspnoea of emphysema, like most other kinds of permanent dyspnoea, is liable to paroxysms in which the shortness of breath becomes

very distressing. These paroxysms are induced by any effort, such as hurrying, or even no more than straining at stool, raising the foot to enter a carriage, or lifting the arm to shave. A paroxysm will sometimes occur during sleep and will suddenly awaken the patient, or will sometimes occur just as he is falling off to sleep. The mere taking of food may be enough to provoke an attack; so will any sudden change in the temperature of the air breathed, such as occurs on leaving a hot room. The paroxysm is sometimes very sudden and severe, and the patient's description of it sounds very much like that of an attack of angina pectoris; indeed, the heart probably does participate, for I have known a pulse which was habitually about 80 fall to 60 or 70 during the paroxysm.

Now suppose a patient suffering from progressive dyspnoea of this kind and from no other symptoms, no cough, no expectoration; and suppose we find by examining his chest that his lungs are enlarged or, in other words, that he presents the physical signs of emphysema, we might well ask whether he were not the subject of protopathic emphysema. And some

physicians say that they have met with such patients, and that therefore they believe in the occurrence of emphysema, pure and simple and uncomplicated. I cannot say that this has been my experience. I have never known this progressive dyspnoea and emphysema to be unattended by cough and expectoration.

Cough.—The cough is a tickling cough (tussis titillatoria) brought on by a troublesome sensation referred to the larynx. A person, affected in this manner and who, in the spirit of the age, diagnosticates the nature of his own disease, goes to a specialist who snips off the tip of his uvula or discovers an irritable spot in the larynx, but fails to afford relief. The cough, like the dyspnoea, steals insidiously upon the patient, until in the course of years he becomes liable to fits of coughing which are very severe, during which he becomes purple in the face, and sometimes even suffers from giddiness; giddiness which is in any degree of intensity, from an attack so slight that the man declares that he has retained his sensibility throughout, to an attack which amounts to total loss of consciousness; in which latter case the patient sinks to the ground and sometimes hurts

himself in his fall; but even at its worst the coma does not last more than two or three minutes. The expectoration which attends the cough is very scanty and consists of pure mucus. Or it may be that there is no expectoration at all, or, at any rate, no exspuition.

Aretaeus describes a class of persons whom he designates 'pneumodes', a word which Stephanus interprets to mean pulmonis vitio laborantes or pulmonarii, and which seems to have the same meaning as the French word poitrinaires. Now, if it were not for one particular in Arctaeus's picture of the disease, we could not doubt that his 'pneumodes' were cases of progressive emphysema. The disease, he says, is a kind of asthma, and there is little difference in the symptoms of the two diseases; all patients labour under shortness of breath as in asthma, but they have this as peculiar, that they cough as if about to expectorate, but their effort is vain for they bring up nothing; or, if anything is forcibly raised from the lungs, it is a small, white, round substance resembling a hailstone. The thorax is broader than natural but not altered in shape; the lungs, though

free from suppuration, are filled with humours; in some cases the affection terminates in dropsy about the lungs or in anasarca. But the pneumodic disease proves fatal within a year from its onset, and this is so grave an objection to our supposing that Aretaeus was referring to cases of pulmonary emphysema that I should not have alluded to his description, were it not for the peculiar sputum which he depicts and which possesses the same characters as those of the sputum expectorated in the affection which Laennec denominated 'catarrhe sec'.

Dry Catarrh.—All physicians admit a close connexion of some kind between bronchitis and emphysema; a connexion in many cases so obvious as to be past all doubt, but in other cases not so. Laennec went so far as to say that emphysema is almost always the result of intense and extensive catarrhe sec. All writers on emphysema mention this opinion of Laennec's; few, if any, adopt it or even discuss it, but no opinion of that remarkable man can be passed over lightly. What does he mean by dry catarrh? He himself admits that the phrase is a contradiction in terms; to find appropriate names for diseases was

not a strong point of his; witness his perversion of the meaning of the word 'apoplexy' in his phrase, 'pulmonary apoplexy.' But medical writings are full of this fault, and Laennec is no worse than many other physicians. A better name than dry catarrh would be dry bronchitis (bronchitis sicca), for the word 'siccus', as applied to pulmonary diseases, denotes scantiness or absence of expectoration. Stoll speaks of pleuritis sicca and pleuritis humida; Hippocrates of dry orthopnoea; and the phrases dry cough and dry asthma are colloquial.

In the lungs of persons who died in an early stage of dry catarrh Laennec used to find the mucous membrane of the bronchia swollen and dull-red or violet in colour; conditions most notable in the smaller bronchia, which might be almost completely obstructed by the swelling. The extent of the swelling was not more than a few lines, the mucous membrane in the same tube above and below being natural. This local bronchitis was extensive in proportion to the duration of the disease. When the dry catarrh was universal, or even very extensive, it always ended by determining emphysema. He often found the partially

obstructed tubes to be plugged by pellets of viscid mucus of the size of hemp or millet seeds, and it is these mucous pellets which make up the pearly sputa which such patients, even when they think there is little or nothing the matter with them, expectorate in small quantity every morning.

During life the dry catarrh often continues to a slight degree for many years, Laennec goes on to say, or it may be altogether latent, the patient noticing no more than that his breath is shorter than that of other men, especially upon exertion. This dyspnoea increases gradually, and the patient becomes subject to attacks bad enough to deserve the name of asthma. The tendency to dyspnoea is accompanied by cough, which at the beginning of the disease is, like the dyspnoea, slight. The cough is attended by expectoration of what Laennec calls pearly sputa, which closely resemble the hailstone sputa (chalazia) described by Aretaeus and Galen. Such is a brief summary of Laennec's characterization of his catarrhe sec.

Now, if we admit that a man in a state of perfect health ought not to cough or expectorate, and also that expectoration implies catarrh, it follows that at

no period of the progress of emphysema is that condition unassociated with catarrh. Again, inasmuch as emphysematous patients always become, in the advanced stage of their disease, manifestly bronchitic or catarrhal, it is reasonable to believe that in the early stage also their cough and expectoration indicate slight bronchitis or catarrh. Lastly, the symptoms of progressive emphysema (as I have already attempted to depict them) and those of Laennec's dry catarrh seem to relate to the same disease looked at from two different points of view.

Conclusions.—We have now reached a position which enables us to resume our discussion of the nature of emphysema. Starting from the note of progressive emphysema; namely, the *Atrophy of lung tissue*, the problem may be resolved into a choice between these alternatives. Is there a primary degeneration of lung tissue, rendering it apt to be permanently distended, and also to be destroyed particle by particle? Or is the atrophy due to distension of the lung; and if so, what causes the distension? In briefer language, is the atrophy primary or secondary? The easiest answer is that

which assumes the atrophy to be secondary to distension. Laennec asserts that 'pulmonary emphysema is almost always developed in consequence of intense and extensive dry catarrh', and we have seen that clinical observation supports this opinion. But in speaking of the priority of catarrh, we must understand it only as a priority of order and conception, and not as a priority of time. Another argument in favour of Laennec's opinion is this, that inasmuch as acute emphysema is undoubtedly dependent upon bronchial affections, it is probable by analogical reasoning that chronic emphysema likewise is so. I will not repeat Laennec's explanation, which you all know, concerning the manner in which he supposes dry catarrh to lead to emphysema, and I will only remark that his hypothesis is not so easily set aside as some people think, by pointing out that the air-current at the mouth of a healthy man is more powerful during expiration than during inspiration, for the conditions in pulmonary catarrh are obviously not the same.

Let us fix our attention upon the fact of the *Barrel-shaped chest* in cases of emphysema. It is a chest

more capacious than a healthy chest could be rendered by the deepest and most powerful inspiration. The distended chest is a sign of distended lungs, and this fact puts before us a disjunctive hypothesis: either the distended chest distends the lungs, or the distended lungs distend the chest. Now the latter hypothesis affords no explanation at all, because it leaves the distension of the lungs unexplained; and the cause of this pulmonary distension or emphysema is the very thing we are searching for. Wherefore let us consider the former hypothesis, namely, that the distension of the lungs is consequent upon increased capacity of the thorax. In normal inspiration which fact precedes the other; dilatation of the lungs or dilatation of the chest? And by what powers can the chest be over-distended? Obviously by the inspiratory muscles, ordinary and extraordinary, and by no others. And if the chest be over-distended, what must ensue? Over-distension of the lungs, because the potential vacuum caused by extraordinarily deep inspiration is certainly not filled up in any other way.

In health the inspiratory distension of the lungs is exactly countervailed by the expiratory contraction.

Why, then, in the barrel-shaped chest is this no longer the case? Obviously because the expiratory powers have been unequal to the task of restoring the chest to its natural shape and size. That is to say, the expiratory powers are no longer equal to the inspiratory. And is not this a sufficient reply to those who, relying upon spirometrical observations made upon healthy people, reject Laennec's explanation of the mechanism of emphysema?

In emphysema, then, there is *Failure of expiratory power*; nay, more, this is the essence of emphysema. Expiration being no longer able to rid the lungs of their exhausted air, ordinary inspiration cannot supply the necessary quantity of fresh air. And there is only one means by which the expiratory failure can be met, and that is by inspiratory movements extraordinary in power and amplitude. These extraordinary inspirations being repeated for weeks, months, and years, the chest becomes permanently over-distended, and hence the lungs become permanently over-distended, and this is emphysema.

We have no clear and certain knowledge respecting the nature of the expiratory failure. We may con-

ceive it to be absolute or relative. Absolute, that is to say, the elastic and muscular movements of expiration are weakened; relative, that is to say, the resistance which expiration has to overcome is increased. 1. The notion of an *absolute* debility of expiratory movement must relate to the elasticity of the lungs only, because there is no reason for supposing the elastic or muscular movements of the chest to be primarily weakened. And thus we are led back to the question of degeneration of lung tissue, either primary or secondary to other disease; an obscure topic which we will again defer for a while. 2. But the notion of a *relative* debility of expiration is that which lies at the bottom of Laennec's doctrine, the resistance to expiration being increased by the presence of mucous plugs in the air-tubes, and by swelling of the mucous membrane. True, reply his critics, but these obstructions are equally great for inspiration as for expiration, and thus we are again met by the question concerning the relative powers of inspiration and expiration, a question which is answered by reiteration of the fact that nature has provided us with very feeble means of reducing by forced expira-

tion the distension of the chest and lungs produced by forced inspiration. The extraordinary muscles of expiration are inadequate, whilst as to the elastic tissues of the lung we may hazard the conjecture, that if overstrained they do not easily recover, and it is only inspiration that can overstrain them.

Now, just to consider for a moment the question whether the over-distended chest can possibly be due to over-distended lungs. In other words, can we assume a primary over-distension of the lungs powerful enough to distend the whole thorax, and to make it barrel-shaped? If so, what distends the lungs? Forced expiration is sufficient to distend certain portions of lung which are unsupported by bone or muscle, such as are the apices. But more than this is inconceivable; it is inconceivable that expiration, how forcible soever, can produce a shape of chest which is identical with that produced by forcible inspiration. Again, a favourite seat of emphysema is the undermost surface of the lung where it lies upon the diaphragm: how can coughing—an act during which the diaphragm is driven powerfully upwards—over-distend this portion of the lung? Surely it is

the powerful inspiratory descent of the diaphragm which produces this effect; and let us remember that the forced expiration of persons coughing, of musicians, or of horses tugging up a hill is rendered possible only by a preceding forced inspiration. In short, we cannot understand the occurrence of a primary over-distension of the lungs sufficient to distend the thorax.

Now to discuss and finally to dismiss the question of the *Degenerative lung changes.* In the first place; it is probable that the elasticity of the lungs is injured if the tissues be much or often overstretched, and any such loss of elasticity must tend to increase emphysema by weakening expiration. In the second place; it is very reasonable to believe that the anaemia, which is the visible and undoubted result of over-distension of any portion of the lung, will cause degeneration and atrophy of the tissues thus imperfectly supplied with blood. In the third place; it is possible that there is such a lesion as primary atrophy of lung, analogous to the atrophy and perforations which we often observe in the omentum, falx cerebri, and valves of the heart. In the fourth place; it is not unlikely that the form of pulmonary emphysema in which the total size of

the lung is not increased, atrophous emphysema, is an atrophy of the second or third kind. And lastly: there are good grounds for believing that even ordinary progressive emphysema with enlarged lungs is, from its very beginning, an atrophic process, even although to the mind's eye the destruction be secondary to the distension.

Summary.—To end our inquiry by recapitulating the results at which we have arrived, I submit these propositions:—(i) That pulmonary emphysema is chiefly due to forced inspirations, although forced expiration may to some extent play its part. (ii) That the distension of the lung, in so far as it is due to inspiration, is secondary to distension of the chest. (iii) That the forced inspiration is rendered necessary by a feeling of dyspnoea. (iv) That the dyspnoea, which occurs at the beginning of pulmonary emphysema and which determines it, is consequent upon obstruction of the air-passages. (v) That in chronic progressive emphysema, this obstruction depends upon bronchitis, either humid and attended with free secretion, or dry with scanty secretion. (vi) That when once emphysema is set up, the dyspnoea and the necessity for forced

inspiration are increased by the natural defect of expiratory power in the lungs and in certain parts of the chest, nature having provided means insufficient for reducing excessive inspiratory distension to the normal, and for thus emptying the lungs of residual air. (vii) That the degeneration and atrophy of lung tissue are usually dependent upon preceding over-distension, although it is possible that pulmonary atrophy may to some extent be primary.

ON THE NATURE OF ASTHMA[1]

BEFORE proceeding to discuss the nature of asthma it is desirable that we should come to an agreement as to the meaning of the word. It was used in a simple etymological sense until the time of Thomas Willis. Asthma originally denoted any kind of panting, gasping, pursy breathing, such as follows upon running or exertion. Hence asthma and dyspnoea were synonymous for most of the older physicians. A few, such as Celsus, signified by asthma the highest degree of dyspnoea, but this was all; asthma was never regarded as a special sort of dyspnoea. In reading the writings of the ancients we must always bear this in mind, and beware of importing into their generic use of the word the special meaning which it bears in

[1] Lecture given before the Royal College of Physicians.

modern times. It is interesting to note that those most conservative of people, the illiterate, continue to use the word in the sense of Hippocrates and Galen.

Thomas Willis was the innovator upon the doctrine of the ancients. His opinions, in their mature form, are found in the second part of his Rational Pharmaceutic, published in 1675, after his death in the same year. He says, truly enough, that the ancient physicians, and also most moderns up to his time, had admitted only one kind of asthma, that which he calls pneumonic asthma, and which had always been deemed to be consequent upon the air-passages of the lungs being obstructed or not open enough. It would be a more accurate expression to say that the ancients regarded all cases of asthma as pneumonic, and dependent upon bronchial obstruction. From this pneumonic asthma, Willis distinguishes a second kind, which he calls convulsive asthma, the primary fault being in the motive organs of the lungs, to wit, in the moving fibres or muscular coats of the air-vessels, or in the diaphragm and muscles of the chest, or in the nerves of the lungs and chest, or in the origin of those nerves in the brain. There is also, he says, a

mixed asthma, both pneumonic and convulsive, and inveterate asthma is usually of this kind.

Willis's doctrine is very comprehensive, and he dimly anticipates all the theories of asthma which have been propounded since his day. His new notion of convulsive asthma was soon laid hold of; the term asthma came to be reserved for the exclusive denomination of that form of the disease which was believed to be convulsive (or spasmodic), and this is the sense in which the word is still used by most persons even in our own day. Willis's influence upon this question of pathology has been so great that the present essay is to a large extent an endeavour to determine whether he were the discoverer of an important truth or the parent of a delusion. A satisfactory definition of the word asthma will be the end of our discussion, if we succeed in attaining a clear and distinct notion of the nature of the disease, for, as Milton, writing in the spirit of both Plato and Aristotle, says: 'Definition is decreed by logicians to consist only of causes constituting the essence of a thing.' But meanwhile we may perhaps be able to agree upon a sort of provisional definition, logically less exact.

Thus, some diseases are defined, accurately enough, by means of their anatomical characters, or the attendent lesions of structure; and some diseases are defined less accurately by their symptoms or the attendent lesions of function. Let us examine asthma from these two points of view.

First, what is the *Morbid Anatomy* of asthma? Here I discover a curious and remarkable fact. We may look through a big book upon asthma, an elaborate treatise deserving the repute it has gained, and we find no chapter dealing with morbid anatomy. Yet surely some asthmatic patients die uncured, and some of their bodies are examined, and in all the bodies examined material lesions are found; what are they? Now many of these lesions are found in some bodies only, and therefore cannot have anything to do with the immediate cause of asthma. Some of these inconstant lesions are those which are apt to occur in the decline of life, and it is noteworthy that Rostan (who practised at the Salpétrière in Paris, the great hospital for old, infirm women) after asking the question, Whether the asthma of old people be a nervous affection? replies, as the invariable result of his post-mortem examinations,

That the asthma of old people is a symptom of an organic lesion, and especially of atheroma of the aorta and of hypertrophy of the heart. Most physicians of our day would probably agree that Rostan's opinion is correct so far as its general principle is concerned, namely, that organic lesions in the chest are found, but he errs in his particulars by being far too exclusive; other morbid changes are much more frequently met with than those which he mentions. Again, such lesions as tubercular affections of the lungs, phthisis (active or retrograde), and acute miliary tuberculosis, though often found in asthmatics who are not old, cannot be deemed essential to asthma. But signs of bronchitis and pulmonary emphysema are always found; and though we are not prepared to call them the anatomical characteristics of asthma, yet the fact that they are constant demands that they should not be passed over, or dismissed with the remark that they are mere complications, an obvious begging of the question. That the bronchitis of asthma should be regarded as an accidental complication, and by no means as an essential element of the disease, is due to the fact that since Willis's time there has always been

a strong tendency to look upon asthma as something mysterious and its cause as supersensual. However, you will probably assent to the proposition that either bronchitis and emphysema constitute the morbid anatomy of asthma, or it has no morbid anatomy. In either case we must reluctantly conclude that structural lesions cannot help us to a definition.

Secondly, definitions based upon *Symptoms,* or disordered functions observed in patients during life, are seldom satisfactory. In the case of asthma, any definition of this kind would involve so many explanations, reservations, and distinctions that it would be nothing less than a description of the disease. I will not attempt to succeed where all nosologists have failed, and I fear that we must confess that symptomatology cannot help us to a definition.

So we will proceed to our investigation in the belief that, in the case of a given patient, most physicians would be able to agree whether he were suffering from asthma or not, and that we have a pretty unanimous though an indefinable notion of the disease. Yet we must admit that the notion has been inconstant; that the extent of meaning of the word has been growing

narrower and narrower. Much of what Willis called pneumonic asthma has long since ceased to be called asthma at all; much of what, by way of exclusion, was formerly deemed to be convulsive asthma, is now known to be dyspnoea due to disease of the heart, blood-vessels, kidneys, to poisoned blood, and other conditions which need not be enumerated. Thus there is a risk lest asthma should become a mere caput mortuum, a kind of dyspnoea left when all known causes of dyspnoea have been separated, the definition of the word being purely negative, indicative of what asthma is not. But asthma is not a mere caput mortuum.

Inasmuch, then, as our most trustworthy guides in all the physical sciences, our senses, seem insufficient to enable us to explore the essence of asthma, either in the living body, or the dead, we must try to grope our way by the help of reason. And we will recur to the rival hypotheses already mentioned and will debate the question (which remains much as Willis left it) whether asthma is a pure affection of the nervous system; or whether it is all pneumonic, due, that is to say, to gross material changes in the lungs; or whether it is a combination of the two.

I. *Spasmodic Hypothesis.*—In the first place let us discuss the nervous, convulsive, or spasmodic hypothesis.

1. That the *Air-tubes* possess muscular coats, or moving fibres, was well known to Willis. That these fibres contract under appropriate stimulus, so as to diminish the capacity of the bronchia, has been demonstrated many times by experiment, the vagus being the motor nerve. But farther than this our knowledge does not extend. From the best and latest works upon human physiology we cannot learn what the use of these fibres is, nor under what conditions they contract, nor whether they contract quickly or slowly, nor whether their contraction is momentary or enduring, yet surely we ought to be able to answer these questions before we can deduce a pathology of asthma from perverted function of these fibres. The prevailing opinion is that they help the bronchial walls to resist distension of the air-tubes. But even supposing this opinion to be true, we are no nearer to understanding the part which these fibres have been assumed to play in the production of asthma. We will admit that it is conceivable that their contraction

may cause dyspnoea, but we must make the reservation that there is no proof of this assumption. And one thing seems to be certain, namely, that if there be such a disease as bronchial spasm, pure and simple, it must be a very rare condition, because it is inadequate to explain the catarrh which manifestly attends most, if not all, asthmatic seizures. Willis himself was far too sagacious a man not to have seen the meaning of this fact. He writes thus: 'Although an asthma is sometimes simple from the beginning—viz. either merely pneumonical or convulsive, notwithstanding, after either disease hath for some time increased, for the most part it gains the other to itself, hence it may be concluded every inveterate asthma to be a mixed affection.' But we have already seen good reason for doubting whether this doctrine of Willis's goes far enough. The whole subject of bronchial spasm is involved in so much obscurity that we cannot admit more than that it perhaps takes a share in the production of asthma, but is seldom, if ever, the chief or only cause. And we may dismiss this topic by adopting the words of Robert Whytt, 'that a true nervous or spasmodic asthma, without any other fault in the

lungs than uncommon delicacy or irritability of their nerves, is a disease which we seldom meet with.'

2. Let us come to the *Muscles of Respiration.* When I began to lecture on medicine at St. Bartholomew's Hospital it seemed necessary that I should expound some theory of asthma. I had been much struck by observing, in bad attacks of asthma, the fixed immobility of the chest in a state of the fullest possible inspiration. About the same time I came across a paper by an experimental physiologist who had found that centripetal excitement of the vagus, divided below the junction of the superior laryngeal nerve, produced tetanic contraction of the diaphragm, intercostals, and other inspiratory muscles; a state of things which is necessarily accompanied by dyspnoea, and which, in this respect, resembles the asthmatic paroxysm. And so for a year or two, I taught that the fit of asthma, at its beginning at least, was due to centripetal irritation of the vagus. But maturer experience soon showed me that this fixed inspiratory distension of the chest is by no means a constant attendent upon asthmatic dyspnoea, that the inspiratory movements are sometimes free and ample enough, and thus I lost all faith

in the doctrine of protopathic inspiratory spasm. Moreover, what is the evidence of inspiratory *spasm* during the attack of asthma? No doubt the chest is in a state of inspiratory distension, dilated to its utmost capacity and fixed in this position. But it is more likely that this state of things is due, not to inspiratory spasm but to expiratory debility. Air is imprisoned in the lungs, and no amount of forced expiration can empty them. In the last lecture I showed what a very partial process forced expiration is; over many portions of the lung it has no power. If the sufferer could empty his lungs he could fill them again; it is the deflation which is at fault, and the extreme inflation is due to incessant forced inspiratory efforts to make the most of what little room for fresh air can be provided by forced expiration. This fact is very well expressed in a tale told by Dean Swift of a farmer who, when dying of asthma, said: 'Well, if I can get this breath once out I'll take care it shall never get in again.' And thus to conclude this topic I submit that inspiratory spasm is not the cause of the asthmatic paroxysm.

3. Again, Willis thought that convulsive asthma might sometimes proceed from irritation of the pul-

monary or thoracic *Nerves*, or of the origin of these nerves in the brain. This is one of those recondite propositions which can be neither maintained nor refuted. Contraction of the bronchial muscular fibres or of the respiratory muscles, if it play any part in the asthmatic paroxysm, may doubtless be due to irritation of appropriate nerves, but the muscular contraction itself has not been proved to occur, and this must be done before we need discuss its causes. The influence exerted by the nervous system upon secretion, nutrition, and the blood-supply is well known as a general fact, but any particular application of this fact to explain the pathology of asthma is at present beyond our power. Thus we have no evidence to show that asthma takes its origin from the nerves or brain.

II. *Pneumonic Hypothesis.*—But if asthma be not convulsive, we are thrown back upon the hypothesis of pneumonic asthma, for we have no third explanation before us. Let us review the argument in favour of pneumonic asthma. This argument is wholly analogical. There are several diseases which resemble asthma in certain respects, more or less. Perchance we understand the pathology of these diseases some-

what better than that of asthma. If so, we may inquire whether the nature of asthma can be assimilated to that of the diseases which it resembles. Obviously such an argument as this is far enough from deserving the name of induction, but we may be comforted by the reflection that to us probability is the very guide of life. Let us enumerate and illustrate the diseases referred to.

1. *A peculiar form of Acute Bronchitis.*—'Last summer I went out of town to see a little boy, seven or eight years of age, whose life was very precious to his family. He was thought to be dying of inflammation of the lungs. I found him raised up in bed, supported by his nurse, and breathing with all his might. His skin was hot, his faced flushed, and his chest heaved, and his nostrils quivered frightfully. There was no croupy sound. Whatever the disease was it was all within the chest. I percussed the chest: it sounded well in every part. I listened: the air entered freely and reached every cell and vesicle of the lungs; but there was not the least perception of the natural respiratory murmur; a shrill sibilus had taken place of it altogether. Wherever you

applied your ear to the chest you might fancy you heard the piping and screaming of a nestful of unfledged birds.' Probably many hearers will recognize the hand of Dr. Peter Mere Latham in the somewhat rhetorical character of the description I have just quoted. I have set before you his description of the disease because it serves as an emphatic text, and not because the affection is very uncommon; it is alluded to by many of the best authors and I myself have seen a considerable number of cases. Latham goes on to say: 'I am speaking of a disease which must be distinguished from asthma according to the usual acceptation—a disease not habitual to the individual and of which, perhaps, he has never suffered a previous attack.' But of course an asthmatic must have his first attack, to which Latham's criterion of habit cannot be applied, and unless he had told us that his patient had never before suffered from a similar attack, and never had one afterwards, his argument that the disease was not asthma falls to the ground.

Latham's patient certainly suffered from acute dry pulmonary catarrh, to use the phrase of Laennec; but in this form of disease the catarrh is not always dry;

on the contrary, small mucous râles are sometimes heard all over the chest. I saw a girl, four years old, who one morning had a little cough, but was quite well in all other respects. In the afternoon she suddenly became much worse and her state alarmed everybody. In the evening her distress, dyspnoea, and lividity were great; the upper part of the chest expanded considerably on inspiration, but there was at the same time much depression of the root of the neck, of the epigastrium, and of the base of the chest. All over the lungs small mucous râles were heard. Her voice and cry were natural, so that there was no reason for suspecting laryngeal disease. Her temperature was below the normal. I was told that she had suffered from several sharp attacks of what had been called 'bronchitis' and 'congestion of the lungs'; that she had been subject to eczema all over the body; and that her father's father and brother had been 'asthmatics' until they reached maturity. The very same night she improved much, and next day she was comparatively well; recovery was rapid.

The chief characteristics of this form of bronchitis may be thus enumerated: the rapidity with which

the dyspnoea becomes extreme; the attendent fever, little or none; the whole attack seldom lasting more than two or three days; and the great tendency to recur. In the intervals, most of the patients are free from pectoral symptoms, but in some cases emphysema occurs, and I have seen it well marked in a patient only three years old, subject to this disease. Most of the children have suffered from eczema, and most of them come from families prone to asthma, bronchitis, and gout.

When we inquire into the previous history of patients who during youth have been liable to undoubted asthma, we find that in a certain number of them their disease dates from one or more attacks of this kind. And surely these attacks *were* asthma from the very first, although they were not deemed to be so at the time, but were called in Latham's language 'acute bronchial inflammation putting on a peculiar form and affecting a peculiar course'. The bronchitis does not cause the subsequent asthma, but it is asthma; the two diseases are identical in nature and the asthma is bronchitis, although a peculiar form of bronchitis.

2. *Spasmodic Croup.*—This is an old phrase now seldom used, yet I do not know that we have a better. It is not a good phrase, because it implies a hypothesis which is probably untrue. The disease is characterized chiefly by acute dyspnoea; indeed, most of the cases described by Millar under the name of 'acute asthma' were cases of spasmodic croup. Spasmodic croup is not laryngismus stridulus, for the dyspnoea of laryngismus is momentary, whereas that of spasmodic croup lasts for several hours, and on and off for days. Spasmodic croup is not quite the same thing as laryngitis stridula, a disease which is characterized more by dysphonia than dyspnoea. Dr. Benjamin Rush of Philadelphia was the first to apply the epithet 'spasmodic' to the disease, an indication probably that he as well as Millar recognized a resemblance to spasmodic asthma. I enter into these details because there still exists, as there always has existed, much confusion in the use of these names. Millar's description of the disease, published in 1769, is vitiated by the fact that he does not distinguish the different kinds of acute laryngeal disease which cause dyspnoea in children. Rush's description, published in 1789, is

much more precise, perhaps because more concise. He says that 'the cynanche trachealis spasmodica is known (1) by coming on *suddenly* and that generally in the night; (2) by frequent and perfect *intermissions* of the symptoms for hours, and in some instances for days, without the least sensible discharge from the trachea; and (3) by yielding to anti-spasmodic remedies, particularly to the warm bath'. Rush had examined the body of a fatal case and had found no marks of a membrane or even of mucus in the trachea; the lungs and trachea appeared to be in a sound state.

Many persons have believed in a close analogy between spasmodic croup and spasmodic asthma. Some have even gone so far as to say that 'children, who have been the subjects of croup or stridulous laryngitis in their earlier years, are prone to suffer from true asthma in later life', but judging from the facts of my own experience I am disposed to think that this sequence is not common. Unfortunately, the pathology of spasmodic croup is not well understood. I do not know that the glottis has ever been seen by means of a laryngoscope during the attack of dyspnoea. Could this be done it would go a long

way towards clearing up the darkness which hangs over the subject. Moreover, patients when attacked by spasmodic croup seldom die, and thus we are deprived of the information which minute post-mortem examination might afford. Nobody doubts that the disease implies an element of acute laryngitis, or of croup, for these two terms are almost synonymous, croup being the acute laryngitis of children. The evidence of laryngitis depends mainly upon these two facts: first, that the attack of dyspnoea is preceded for a few hours by hoarseness and croupy cough and perhaps by other signs of catarrh of the respiratory mucous membrane; secondly, that the interval between the attacks is not free from the same symptoms. Admitting, then, that there is a fundamental ground of laryngitis, we must inquire in the next place into the cause of the dyspnoea, so sudden, and so temporary, and here lies the difficulty. The epithet 'spasmodic' begs the question by assuming that spasm of the glottic muscles is superadded to the laryngitis. But when we compare spasmodic croup with what is universally admitted to be a glottic spasm—that is to say with laryngismus stridulus—the difference between

the two diseases appears to be so great as to make us doubt whether the dyspnoea of croup can be spasmodic. In laryngismus the dyspnoea sets in very suddenly, and lasts only a few seconds, for if it last longer the child will die. At any rate if the croup be spasmodic, we must assume that the spasm is very incomplete and that it lasts several hours, assumptions which seem improbable. It is improbable that the spasm should be always incomplete, and should never become a thorough laryngismus, and thus kill the patient; whereas deaths from spasmodic croup are so uncommon that we may almost say that they do not occur. Moreover the catarrhal swelling of the laryngeal mucous membrane would render any spasm much more likely to prove fatal; and we must never forget the small size of the glottis in children when we speak of their laryngeal diseases.

But, if we give up the notion of spasm, are there any other explanations which we can fall back upon? Two have been offered. One was put forward first, so far as I know, by Felix Niemeyer. He supposes that viscid mucus accumulates in the glottis while the child is asleep; that this mucus becomes dry and so

glues up the rima glottidis; an ingenious explanation, not wanting in plausibility, but which can be neither proved nor disproved. The chief argument against this hypothesis is found in the great resemblance between spasmodic croup and the peculiar form of acute bronchitis which we discussed just now. In both diseases, the same slight premonitory catarrh, the same sudden onset of alarming dyspnoea in the afternoon, the same speedy abatement of the dyspnoea, the same freedom from fatal results, and the same tendency to recur. Now, there is no reason for thinking that the bronchitic dyspnoea is due to accumulated mucus, still less to dried mucus; and hence we may well doubt whether spasmodic croup is due to these conditions. But yet, until we can bring our senses to bear directly upon the glottis, until we can see what actually takes place, we may admit that there is possibly some truth in Niemeyer's hypothesis. How often are we tempted to exclaim with the surgeon in the old novel, 'A fig for reason, I laugh at reason; give me ocular demonstration.'

The other explanation seems more probable. It supposes a sudden and temporary swelling of the

mucous membrane of the larynx, such as sometimes occurs in the pituitary membrane during acute coryza, when one nostril becomes suddenly blocked; and not by mucus, so far as can be made out, or at least no mucus can be expelled from the affected nostril. In the case of the nose, this sudden swelling can be easily understood, for anatomists tell us that the veins of the mucous membrane over the turbinate bones constitute a cavernous structure, and that the membrane in this situation is erectile. No structure of this kind has been detected in the mucous membrane of the larynx, and hence the argument from analogy is weakened to a corresponding degree. In short, the opinion that spasmodic croup is due to sudden swelling of the mucous membrane depends mainly upon reasoning by way of exclusion, there being fewer objections to this pathology than to the hypotheses of spasm or of mucous obstruction.

Leaving these dry catarrhs of the respiratory tract let us turn our attention to certain catarrhs of a character exactly opposite, being attended by abundant secretion of mucus; for these catarrhs also have a close affinity with asthma.

3. *Paroxysmal Coryza.*—In the first place we will consider paroxysmal coryza or 'paroxysmal sneezing' as it is sometimes called. And let me set before you a vivid picture of the disease, drawn by a sufferer, a married lady, aged twenty-nine years. I copy the exact words of a letter she wrote: 'Severe cold in the head every morning for two or three hours after waking; continual running of the nose, sneezing, watering of the eyes; pocket-handkerchiefs are of no use, I have to use towels. Frequent fits of violent sneezing, perhaps repeated a dozen or twenty times. Continual rising of phlegm into the mouth in the morning on waking; often an accumulated mass of phlegm has to be got rid of. Loss of taste and smell, and impaired voice in singing. The above symptoms have been present for five years, though they have increased of late. In addition the following have occasioned trouble during the past nine months: a wheezing in the chest, difficulty in breathing, or in taking a deep breath. At times this prevents me from lying down at night; at least I go to sleep in the usual way, but am disturbed three or four hours after by a feeling of suffocation and am obliged to

spend rest of night sitting in a chair. This feeling sometimes comes on without any warning. Last week, when returning from a dinner party, I suddenly became oppressed in breathing, and had quite to struggle for breath for ten minutes or so. Violent exercise, such as running and, I think, swimming, also hearty laughing, produces much the same effect—viz. a wheezing and difficulty in breathing freely. Voice in singing much fallen off. Damp weather and cold winds seem to increase the tendency.' Thus far the patient's own report, to which the following facts may be added: there was a tendency in her family to asthma, eczema, and gout; she herself never had eczema, but it had appeared in several of her relatives, and also in her only child, fifteen months old.

The connexion between paroxysmal coryza, asthma, and eczema is remarkable. A girl, eleven years old, had suffered from frequent attacks of asthma since the age of two years. Moreover, she had always been liable to fits of bad sneezing with running from the eyes. This sneezing was sometimes followed by asthma, sometimes not. When a baby she had eczema. In her father's family there was a tendency to eczema

and gout, but not to asthma; in her mother's family there was probably a tendency to asthma. She had a younger brother who was asthmatic, and who suffered from eczema in infancy. The girl, the brother, and the mother were all of a dark complexion. A second girl, sister of the patient, was of a fair complexion, and had shown no tendency to asthma.

A boy, two years and a half old, became eczematous at six months of age. The eczema cleared off at twelve months and then he began to suffer from asthma. And mark that his attacks of asthma began with sneezing and running from the nose, and that an evidence of the chronic nature of the coryza was afforded by the ill-developed condition of the bridge of his nose. But there was no obstruction to breathing in the nose itself.

I will give a brief outline of another case which shows the connexion between this recurrent coryza and spasmodic croup as well as asthma. A lady, thirty years old, was subject to spasmodic croup when a child, and had been liable to bronchitis all her life Since the birth of her first child, three years ago, she had become asthmatic, that is to say, she was con-

tinually rather short of breath, but, more especially soon after arising in the morning or upon any sudden effort; her breathing would sometimes become very bad, she would turn blue, and the whole attack would last two or three hours; it had occasionally recurred three or four times in the day. Moreover, for two years she had been subject to attacks of sneezing almost daily, with copious distillation from both nostrils, as bad in winter as in summer. There were no objective signs of disease in the chest, nasal fossae, or pharynx.

It is no part of my plan to discuss the relation which exists in some cases between these paroxysmal disorders and permanent disease of the nasal and post-nasal regions. But with regard to the actual attack of coryza I will observe that it is more than a mere defluxion of mucus. The mucous membrane of the nasal fossae is swollen, especially the cavernous tissues over the turbinate bones, which swelling may be enough to make the opposite surfaces of the mucous membranes touch, and to the tickling sensation which ensues upon this contact much of the sneezing and much, in all probability, of the distillation are due.

The fact that in some cases asthma very quickly follows coryza suggests the notion of a rapid spreading of the catarrhal affection downwards along the respiratory tract; what in the upper part is a paroxysmal coryza becomes, in the lungs, paroxysmal dyspnoea or, in other words, asthma.

4. *Paroxysmal Bronchial Flux.*—Closely allied as paroxysmal coryza and asthma undoubtedly are, there is an obvious unlikeness between them in one respect, namely, in the amount of mucous secretion. But there is a peculiar form of what Laennec calls acute pituitous catarrh of the bronchial tubes, which more closely resembles recurrent coryza, in the abundance of the flux, its short duration, and its tendency to recur.

'A woman, aged thirty-two years, corpulent and of fair complexion, had suffered for some months from an obstinate cough, when one evening she was attacked by a complaint which very much resembled the paroxysm of spasmodic asthma except that it was much more violent than first attacks of that disease usually are, and that its remission was attended with a very copious discharge of frothy serum from the

bronchial tubes, which was thrown up by a slight though almost continual cough.' On the next morning she was much better and she soon recovered. Some months afterwards she had another attack of the same kind and about eighteen months after the first attack she had a third, much more violent. 'She was suddenly seized with dyspnoea attended with a convulsive kind of cough, which in less than five minutes from the time of attack increased so as to produce the appearance of suffocation. Her senses forsook her, her face became livid, her extremities were cold, and the action of the heart was so much diminished that no pulsation could be felt in the wrist, and but very little in the left side. She remained in this state nearly two hours, during which time a very large quantity of frothy serum tinged a little with blood was discharged without any visible effort by the mouth and nostrils. About the end of that time, some very faint and involuntary efforts to cough came on which gradually increased, and with every effort large quantities of the frothy serum were thrown off; perhaps the whole quantity might amount to three or four pints. About three hours after the

beginning of the attack, the difficulty of breathing became very sensibly diminished and her senses were observed to return.' In a few hours she had recovered so as to be much the same as she was before the seizure. After a somewhat longer time she had attained the condition of a person in the best state of health. This woman was a patient of Mr. Thomas Baynton of Bristol and her case is narrated in a book published by the well-known Dr. Thomas Beddoes of the same city. You will have observed that the profuse expectoration is said to have been 'serous', but this word is no doubt used in a loose sense, for Beddoes who was a good chemist expressly says that the fluid was ascertained by careful inquiry to be mucus, and not saliva, as he at first suspected. In the lecture on bronchitis I spoke of acute pituitous catarrh (page 73), always a serious disease; and Baynton's case was an instance of this affection, but peculiar from its tendency to recur, and in this respect closely resembling paroxysmal coryza and asthma.

5. *Hay Fever.*—In this place I might refer to the fact that hay fever, which usually assumes the form of coryza and lacrimation, sometimes becomes asthma.

The paroxysms of hay asthma and of what we call ordinary spasmodic asthma differ in no particular. This topic has been so fully discussed by Sir Andrew Clark that I need not allude to it here. I will only repeat that the cause, whatever it be, of hay fever will produce ophthalmia, coryza, or asthma according to the portion of the mucous membrane which is affected.

Summary. To sum up the argument in favour of the opinion that asthma is (in Willis's phrase) pneumonical, as distinguished from the convulsive (or spasmodic) form of the disease: the assumed bronchial obstruction being due, not to any sort of spasm, but to what he calls an afflux of humours upon the air-passages. We have seen that there are five or six affections of the respiratory tract which are akin to asthma, and which may be said to constitute, together with asthma, a special class of diseases, characterized by fits of dyspnoea, or of mucous flux. The attacks set in suddenly, they speedily reach their highest point of severity, their duration is short, they are apt to recur, and in the intervals the patient is more or less free from signs of disease, until the catarrh be-

comes chronic. The tendency to the disorders is hereditary and runs in families; many patients manifest a tendency to two or more of these complaints. If the force of these analogies be admitted, we may carry the argument farther and observe that all these diseases are catarrhal. Now catarrh implies two conditions, namely, increased secretion and swelling of the membrane, but as matter of fact neither of these conditions is constant. The defluxion or increased secretion may be absent or at most may be very small, and this constitutes Laennec's dry catarrh. The swelling is more constant, at least in acute catarrh; in paroxysmal coryza, which has so close an affinity with asthma, the swelling can be seen; moreover, both defluxion and swelling occur with great rapidity. These two concomitants of catarrh will explain the most important symptoms of all the disorders in question, including asthma.

If we consider the catarrhal tendency to be due to an inherent delicacy or irritability of the mucous membrane, a tendency usually inherited, we seem to be able to understand the reason of the fact that asthmatic persons during childhood are so often liable

to eczema, which may be deemed to be indicative of a similar condition of the skin.

In the earlier part of this essay we arrived at the conclusion that the doctrine of spasmodic asthma is very imperfectly supported by facts, and now the argument has led us to believe that all asthma is merely a peculiar form of bronchitis, and that there is no need for any hypothesis of spasm in order to explain the phenomena of the disease. Should it be objected that bronchial spasm may possibly aggravate the effects of catarrh, we may appeal to the philosophic law of parcimony, 'Entia non sunt multiplicanda praeter necessitatem.' This is not a new doctrine. Many years ago it was maintained very ably by Beau. Sir Andrew Clark arrived at the same conclusion by a different path, by noting how one and the same cause, hay fever, produces sometimes coryza, sometimes asthma, and sometimes both together. Which element of the catarrh, defluxion, or swelling, obstructs the tubes is a question which naturally arises. The interesting observations of Lefèvre, published more than sixty years ago, upon the expectoration of peculiar mucous cylinders, which he compared to cooked

vermicelli, towards the end of an asthmatic attack, render it very probable that both secretion and swelling concur to obstruct the bronchia. But there remains another and much deeper question which concerns the asthmatic *tendency*, In what does it consist? Why are some persons prone to asthmatic catarrh and others not? Why does the disposition run in families? What is the bond which in so many cases connects the several diatheses of asthma, eczema, and gout?

XI

ENLARGEMENT OF THE SPLEEN IN HEREDITARY SYPHILIS AND IN SOME OTHER DISEASES OF CHILDREN[1]

I. In about one-fourth of the cases of Hereditary Syphilis the spleen is much enlarged. Sometimes enlargement of the liver and lymphatic glands is superadded. The degree of splenic enlargement may be taken as a sort of index of the severity of the cachexia: the majority of cases with great enlargement die, but sometimes such children survive, the spleen gradually diminishing in size as the health improves; not diminishing however at the same rate as the health improves, but remaining for a long time a monument of past cachexia. Thus the spleen can often be felt enlarged in children of three years old and upwards who bear the marks of past syphilis

[1] Summary of a paper read before the Royal Medical and Chirurgical Society on March 26, 1867.

upon them. Sometimes an enlarged spleen is the only sign of an active syphilitic cachexia.

II. In Ague also it is sometimes the discovery of an enlarged spleen which first puts us upon the right scent, and enables us to detect the existence of ague which would otherwise be latent.

III. Children, in whom we can all but positively deny the existence of syphilis or ague, occasionally acquire a greatly enlarged spleen, attended with a cachexia which is sometimes very profound. We can exclude leukaemia, lymphatic anaemia [lymphdenoma], rickets, purpura and primary disease of the liver, in the cases referred to; whence it is inferred, that children are subject to one or more cachexiae not yet defined, or else that the known cachexiae may present themselves shorn of all the usual signs by which they may be recognized. For the cases in question, the name of Simple Splenic Cachexia is proposed: a condition which seems to be analogous to lymphatic anaemia.

XII

TUBERCULAR PERITONITIS IN CHILDREN

THERE are three kinds of tubercular abdominal disease occurring in children: chronic peritonitis, decay of the mesenteric glands, and ulceration of the intestines. These diseases are sometimes associated in different ways, sometimes they happen each alone by itself. They constitute a condition which the common people call 'consumption of the bowels', although this term also includes the chronic enteritis which is not tubercular.

My present topic is tubercular peritonitis, or, what in the case of children is almost the same thing, chronic peritonitis.

I. PATHOGNOMONIC SIGNS

They are discovered by physical examination of the abdomen, and are of two kinds: indurations and suppurations.

1. *Indurations* are detected by palpation. They

have the form of bands and patches, or of lumps and knots. They certainly are present in most cases at some period or other of the disease. They begin to appear within a few weeks of the onset of the illness or even as early as the second week. They are more or less obscured by co-existing tympanites; and for this, or some other reason, they are not felt equally well at all times in the same patient. The *bands* are commonly transverse, stretching right across the belly, or confined to one side of it. They are felt above the navel, on a level with the navel, or below it; for instance, parallel to Poupart's ligament. They are sometimes remarkably hard. They are mostly about the breadth of the finger, or rather more. The *patches* of induration, like the bands, may be met with anywhere. The *lumps* and *knots* are sometimes very numerous, sometimes there are only one or two. Their size is very different, they often feel like nuts or pips. They differ very much in situation; there is no rule in these matters. The distinction (not always possible) between peritoneal and glandular lumps is to be found in the fact that the former are as a rule more superficial, less deeply seated than the latter.

2. *Suppuration.*—Discharge of pus from the navel, due to a local peritoneal abscess, is likewise characteristic. Sometimes there is nothing more than an appearance of pointing, which afterwards subsides, and never goes on to discharge. The navel looks red and swollen, not merely protruded, but its tissues swollen: a sign which is no less characteristic. The pus is sometimes mixed with faeces: a condition which indicates ulceration of the intestine, and a very much more dangerous affair than the discharge of pus alone.

Examination of the abdomen will often discover two other morbid states, by no means pathognomonic, namely, tympanites and ascites.

3. *Tympanites*: the abdomen distended, elastic, and everywhere resonant to percussion. The diagnosis is not possible unless there be concurrent signs of induration, suppuration, or of tubercular disease elsewhere.

4. *Ascites* is less common. It sometimes supervenes upon tympanites; and this sequence of symptoms, tympanites asciticus, always makes the existence of tubercular peritonitis probable. Still more probable or even certain is the diagnosis if the ascites be

associated with palpable indurations or with manifest tubercular disease elsewhere.

II. Onset of the Disease

Tubercular peritonitis is usually idiopathic, that is to say, it constitutes the whole of the disease. This is the only case which I consider on the present occasion. I pass by the chronic peritonitis which is associated with manifest tubercular disease of the lungs, intestines, or other parts.

1. The onset of protopathic tubercular peritonitis is mostly *gradual*. The belly becomes tender, painful, and big; at the same time the health of the child fails; there are emaciation, loss of appetite, and in many cases slight fever. At the beginning, examination of the abdomen discovers nothing but more or less tympanites, sometimes associated with a little ascites. The tympanites usually remains moderate, but in some children it becomes excessive, so much so as to cause permanent dyspnoea. The ascites of the onset is small in quantity, and mostly goes away in a few weeks. Afterwards the indurations which I spoke of begin to appear.

2. The onset is sometimes *sudden* and attended by

severe symptoms relative to the alimentary canal: for instance:—

i. Vomiting and tympanites.

ii. Ileus: obstruction of the bowels. A boy, six years old, was attacked by sudden pain in the belly, vomiting after everything he took, complete constipation and pyrexia. The intestinal obstruction (doubtless due to paralysis of the muscular coat) yielded in five days, and was followed by great tympanites, and later on by other signs of tubercular peritonitis.

iii. Acute gastro-enteritis. A girl, twelve months old, came of a family in which there is a tendency to tubercular disease. She was in good health until March 13, when she suddenly vomited and her belly swelled. Next day, the vomiting continued and diarrhoea was combined with it. On the third day I saw her: the vomiting and diarrhoea had ceased, but they had lasted long enough to produce considerable emaciation: her temperature was 102°: the tympanites was great, nothing was palpable in the abdomen, and there was a universal clear percussion tone, even over the region of the liver. The stomach seemed to be much distended: there was a globular

resonant swelling in the left hypochondrium, reaching nearly to the level of the navel. My opinion was this: that the tympanites was due to the gastro-enteritis, that there was no reason to suspect intro-susception of the bowel, and that although peritonitis was possible there was no proof of it. Afterwards she improved a little until April 16, when the severe vomiting recurred, this time attended, not by diarrhoea but by obstinate constipation: indeed it seemed that the tympanites was about to end in ileus. The vomiting and constipation continued, and now the signs of tubercular peritonitis became obvious: the distension of the abdomen was very great: on the right side, on a level with the navel, was a hard band, two inches long: on the left side, something of the same sort. The obstruction of the bowels gave way in a day or two, and the child lingered two weeks longer before she died, about two months from the beginning of her illness.

III. Course of the Disease

Suppose the chronic peritonitis established, we shall most likely be able to detect one or other of the

pathognomonic signs which I spoke of at the beginning. I will now speak of the symptoms which are attendent upon the confirmed disease. Emaciation from the first; appetite bad; vomiting now and then. Action of the bowels uncertain. Diarrhoea, occasional or even more continual, is no proof by itself of the co-existence of intestinal ulceration. Constipation is common, and it goes on in a few uncommon cases to absolute obstruction of the bowels. This obstruction is either temporary, giving way at length to the remedies employed, or it is permanent, and causes the death of the patient. Obstruction of the bowels, although it may have been relieved, is apt to recur. Pain in the belly is sometimes severe, and is sometimes felt on heavy pressure only. The movements of the bowels are sometimes visible, whether there be much tympanites or not. Fever is present at first, but is seldom high; sometimes it is quotidian intermittent apart from any suppuration; sometimes a low degree of fever is constant throughout the whole course of the disease; sometimes fever is absent for weeks together, or even throughout the whole disease. So that at the time we see our patient it may happen

that there are no fever or other symptoms of disease, except the emaciation and the abdominal signs already spoken of.

In rare cases emaciation is absent until quite the end of the disease: the patient may be plump and fat, and especially so over the abdomen.

The *Diagnosis* sometimes is impossible. A lad, seventeen years old, suffered for a year from attacks of vomiting frequently recurring. He was very thin: his tongue was always very red: nothing could be detected in the abdomen, and there were no other signs of disease. He died suddenly. Examination of the body discovered tubercular peritonitis, universal adhesions: the mesenteric glands not enlarged, and the lungs absolutely free from any form of tubercle. Examination of the bodies of persons dead from pulmonary consumption not seldom discloses tubercular peritonitis unsuspected during life.

The disease sometimes simulates typhoid fever. A lad, fifteen years old, fainted at his work on April 18, felt pains and aching in his limbs, and took to bed. On April 27, when first seen, he was febrile, the belly somewhat swollen, soft and nothing palpable in it:

he was delirious at night. The spleen became perceptible, two rosy spots appeared, but two only; the stools were sometimes solid, sometimes like pea-soup; the fever varied between 99° and 103°, with quotidian remissions. On May 11, he vomited, his belly was painful and tender. On May 12, the vomiting was very frequent, his pulse was very small and feeble; the question of intestinal perforation arose; but the belly was not much distended. Next morning he died. It was a case of tubercular peritonitis; peritoneal adhesion universal; a few tubercular ulcers in the ileum; not much tubercle elsewhere.

IV. Termination of the Disease

1. *Recovery* from tubercular peritonitis is common. In the course of months, or a year or two, the tympanites disappears, and the indurations cease to be palpable. The patient is left pale and weak, and may continue so for the rest of life. On the other hand, he may regain his original state of health.

2. *Death* from tubercular peritonitis occurs in several ways. A slow exhaustion is common, especi-

ally when other forms of tubercular disease come to complicate the case. Increasing and great ascites may be the cause of death. In these cases, tubercular peritonitis is sometimes associated with highly marked cirrhosis of the liver. Or fatal obstruction of the bowels may occur.

When suppuration has occurred there is an additional danger. Mere pointing sometimes goes away without any manifest discharge of pus from the navel or any other part. When actual discharge of pus from the navel has occurred recovery is still possible. But when there are signs of a fistulous opening into the bowel the case is hopeless.

V. Therapeutics

The first thing to mind, in the treatment of tubercular peritonitis, is to keep the abdomen at rest. This can be done only by keeping the patient in bed. A boy, who was slowly recovering whilst he was in bed, underwent a fatal relapse of his disease by being taken up and dressed against orders.

Another part of the treatment consists in putting a flannel bandage round the belly, so as to reach from

the hips to the ribs. Much pain in the abdomen is alleviated by hot and moist fomentations, as hot as the patient can bear; linseed meal poultices, flannel fomentations, or, what is usually best, a flannel bag full of bran or camomile flowers, which can be heated in hot water or an oven as often as needful. You may sprinkle the fomentation with laudanum; or you may smear the abdomen with a liniment composed of equal parts of extract of belladonna and glycerine.

It is needless to say much about the necessity of allowing none but the most easily digestible kinds of food; in short, to feed the patient very much as you would feed a baby. Cod-liver oil, if it can be taken, is sure to do good.

The effusion of ascites, when recent and small in quantity, often disappears by being let alone. But when the effusion is abundant, and shows no signs of diminishing, an incision should be made, so as to let all the liquid out; the wound being carefully stitched up afterwards. The fluid is sometimes bloodstained.

An abscess should be opened and drained.

XIII

THE SIGNS OF ACUTE PERITONEAL DISEASES[1]

PERITONITIS is a word strictly anatomical, and relates to an affection of structure only. The structure affected is known by its ancient Greek name, peritoneum: the corresponding English term, the rim, or rim of the belly, has gone out of use, or is remembered by being found in old books, such, for instance, as the writings of those learned anatomists Robert Burton and Phineas Fletcher, contemporaries of Harvey.

The peritoneal structure has functions no doubt, but they are so unimportant or so obscure, that, however much they be disordered or suspended, no signs peculiar to the consequent disease can be discerned. This is the reason why the ancients, whose nosology was founded almost wholly upon symptoms

[1] Lecture given before the College of Physicians in 1892.

or disordered functions, knew nothing about peritonitis as a disease of the peritoneum. In other words, peritonitis was not recognized before morbid anatomy began to be studied; nay, not until morbid anatomy had been studied for many years. In Morgagni, and even in Matthew Baillie, there is little or nothing about peritonitis; indeed nothing about it under that name. Nor could anything be more natural than this state of opinion. When the abdomen was laid open, in a fatal case of peritonitis, it was not the peritoneum, but the intestine, the stomach, the omentum, all highly inflamed, that caught the mind's eye of these early anatomists: nor did they inquire which portion of those viscera was inflamed first and foremost. Hence the nosologist, Sauvages, invented the terms, gastritis, enteritis, mesenteritis, metritis, cystitis, to signify inflammation of the respective organs as manifested by changes in their outer peritoneal tunic: and from 1750 for many years onward, these words were much used, and always in the sense indicated. Sauvages invented the term peritonitis also, but he meant thereby inflammation of that part alone of the peritoneum which lines the abdominal walls and covers

no viscus. No wonder that the word, while this was its meaning, was very seldom employed: no wonder that Cullen, who, in his Nosology, gives a place to peritonitis, excludes it from his First Lines, saying that the disease, when existing alone, is hardly to be recognized and does not require any special treatment.

This state of morbid anatomy, this failure to recognize the unity of peritonitis, faithfully reflected the state of anatomy in general. The peritoneum was known as being the outer tunic of the stomach, intestines, and other abdominal viscera, but of peritoneum as a uniform continuous structure, as a single organ, so to speak, anatomists, before the time of Bichat, had little or no notion.

The study of puerperal fever led the way to more modern opinions. That disease had been known for many centuries, but by its symptoms only: one of the best descriptions of it, written from this point of view, is to be found in the works of Thomas Willis. He, in all likelihood, never examined a case after death, and he therefore deemed the fever to consist wholly in an infection of the blood, not secondary to any local

inflammation. It was not until the middle of the eighteenth century that it came to be known by many that the abdominal viscera, or rather their peritoneal surfaces, are inflamed in most cases of puerperal fever; and from this time onward one form at least of universal peritonitis was well known. But not known by the name of peritonitis: that term had been invented but was never employed, a fact which is proved by a story which John Hunter used to tell in his lectures. He said: 'A man whom I tapped at the hospital died the third day, I said he died of the puerperal fever. This was smiled at in the hospital, and some were pleasant in remarking on the curiosity of a man being delivered; but a few months afterwards another having the same fate, I convinced them, by dissection, that he had died of suppuration of the peritoneum, which we must admit to happen in puerperal fever.'

A great change of opinion, and a conversion to the modern conception of the peritoneum, is marked by the publication of Bichat's *Treatise on Membranes*, in 1800. Henceforth the peritoneum is deemed by all to be not many several portions but a single whole.

Discoveries are seldom made at a bound, the sunrise is foretold by the daybreak; and there were those who, before Bichat, had perceived the unity of the peritoneum; I refer especially to James Douglas and Johann Gottlieb Walter. Bichat was more than an anatomist, he was a great morbid anatomist: he had attained to modern doctrine with respect to peritonitis also. But what his early death, a death too early, suffered Bichat not to write, was written by his disciple Laennec, whose *Histoires d'Inflammations du Péritoine*, published in 1803, was the first essay on peritonitis conceived in the modern spirit. And here I will bring my preliminary history of opinion to an end.

It is not my intention to speak of the morbid anatomy of peritonitis. Nor of its causes, a topic which has become altogether one of microbes and morbid poisons. The changes which peritonitis begets in the living body is my theme: I do not suppose that I can say much that will be new to my hearers; all that I can pretend to do is to recall to their memories the facts of their own experience, and

to arrange, criticize, and endeavour to explain those facts. 'Ament meminisse periti.'

I. *Local Signs.*—The chief local signs of acute peritonitis are three—pain, meteorism, and ileus—and to these I will, in the first place, direct your attention. But before I proceed I may remark that, with regard to the symptoms, both local and universal, of acute peritonitis, it would be possible to take the term 'peritonitis' in the sense of any affection of the peritoneum. Which is all that the word signifies, strictly speaking. The termination -itis is a feminine adjectival suffix which has nothing to do with implying inflammation: peritonitis means no more than peritoneal, disease (nosos) being understood. The symptoms of sudden inflammation of the peritoneum, of sudden haemorrhage into the peritoneum, and of sudden perforation of the peritoneum are essentially the same. However, I have not the slightest intention of using the word in any but its customary sense, and peritonitis shall mean, as it always has meant, inflammation of the peritoneum.

i. *Pain.*—Broussais speaks of pain as being the only pathognomonic sign of peritonitis: I think it

would be nearer the truth to say that there is no pathognomonic sign at all. Yet, however vague and uncertain a sign of disease pain may be, it often is, at the onset of peritonitis, our only guide to the locality of the affection, although an untrustworthy guide. The earlier physicians called the pain of peritonitis 'colic': nor is it always easy, even in the present day, to distinguish colic from peritonitis. The symptoms associated with the pain do not always help. In some cases of mere colic (or intestinal pain), say lead colic, the abdomen is very tender to the touch, and the pain is not relieved, but is even increased, by firm pressure. Moreover, colic is sometimes a febrile disease; and for proof of this assertion I may again refer to lead colic; the temperature of some persons suffering from that disease will rise considerably and remain for days above the rule of health. The colic of indigestion is sometimes indistinguishable from an attack of peritonitis, until the threatening symptoms pass away with a free action of the bowels.

But the most puzzling disorder of this kind which I have met with is the abdominal pain which sometimes accompanies the menses in young women.

Pain, having all the characters of colic, is common enough about the menstrual period and causes no difficulty. Menstruation is not seldom a febrile process, and when this is all, we know with what we have to do. But when abdominal pain and fever are associated, when they precede the appearance of the menses by two or three days, when the patient shivers once or twice, vomits, lies with her knees drawn up, and when her belly becomes swollen, how can we at first have any doubt that she is suffering from peritonitis? Yet no sooner do the menses occur than all these symptoms disappear, and then how can we any longer believe that her complaint has been peritonitis? Not only does colic simulate peritonitis, but the reverse is also sometimes true, that peritonitis, at the onset, cannot always be distinguished from colic. This diagnostic difficulty may be met with, for instance, in peritonitis due to sudden perforation of a hollow viscus, especially the stomach or duodenum. In such cases it often happens that the temperature of the body does not rise; and for some hours at least the pain has all the characters of colic pain, and there are no other signs distinctive.

But it may be that in contrasting thus the pain of peritonitis with the pain of colic, we are seeking for a distinction where there is no real difference. Indeed it is highly probable that the earlier physicians were often right, and that much of the spontaneous and paroxysmal pain of peritonitis is due to colic, that is to say, to vermicular contractions of the intestines much more powerful than usual. Surgeons tell us that when they open the abdomen in order to remove an ovary, the intestines are seen to be at first in very active movement; and that these movements may be painful is proved by what we sometimes observe in intestinal tympanites, when the peristaltic contractions of the bowels can be seen through the abdominal walls, each contraction being attended by an unnatural sensation or by actual pain. Moreover, surgeons say that they can handle, cut, and scratch the stomach or intestines of a man who is quite sensible, and not cause in him any sensation of pain: but we cannot go so far as to affirm that an inflamed peritoneum may not be extremely sensitive to painful impressions.[1]

As to tenderness upon pressure of the abdomen, is it not a mistake to suppose that it is pressure upon

[1] See note p. 352.

the peritoneum alone which brings forth the pain? The skin also is tender, and is sometimes tender to the gentlest touch. In bygone days I have attempted to shave the head of a patient suffering from acute meningitis and have been compelled to desist on account of exquisite tenderness of the scalp. No question of pressure upon the membranes of the brain can arise under such conditions. Indeed, tenderness of the skin is apt to follow great pain of any underlying part. I have already remarked that simple colic may be accompanied by great tenderness on pressure. And I commend the consideration of these facts to those who find a difficulty in believing that leeches or blisters applied to the skin can possibly affect a deeply seated part with which the skin has no obvious connexion.

ii. *Meteorism.*—Leaving the topic of pain, I now pass on to the other local signs of peritonitis, namely meteorism and ileus. The pain is in great part intestinal, meteorism and ileus are wholly such. The pain is in great part due to intestinal spasm, meteorism and ileus are due to intestinal paralysis. The hollow viscera with muscular coats are the only viscera

which are directly affected by the peritoneal inflammation, and this affection takes the form of spasm or paralysis. Patients with peritonitis are often unable to pass their water; whether from paralysis of the bladder, or from inability to start the reflex act, may be open to question; the latter is probably the more usual cause. But about the intestinal paralysis there can be no doubt. It manifests itself in its earlier and slighter degree by meteorism or acute flatulent distension of the bowels. I do not speak of that peritoneal meteorism which is due to the escape of air into the peritoneal cavity in consequence of rupture of some part of the alimentary canal, but of that intestinal meteorism only which is secondary to peritonitis. Intestinal paralysis is no longer a matter of inference: abdominal section nowadays often gives surgeons the opportunity of seeing how intestines which, when first exposed, were in active movement, afterwards become exhausted, and lie limp and motionless. This intestinal paralysis is not continual or not universal, for in patients whose abdominal walls are thin, vermicular movements of the intestines, either spontaneous or produced by handling the belly, can be seen sometimes in

spite of very great meteorism. But this is an exception to the rule: usually no intestinal movements can be seen, and probably none occur, or else they are too weak to show themselves. So we may suppose that the flatulent distension is due partly to relaxation of the intestinal walls and partly to weak peristaltic movement insufficient to pass the wind onwards, a condition closely resembling constipation. This torpid meteorism, I just remark in passing, may be attended by great and constant pain; a fact which seems to show that the pain of peritonitis is due not altogether to colic, or painful intestinal contractions, but partly to the inflamed peritoneum itself. Another proof that the intestines are not so utterly paralysed as might at first seem likely, or that the large intestine at any rate escapes, is afforded by the fact that natural defaecation, or even diarrhoea, will accompany acute peritonitis. This was so in the epidemic disease which caused the death of Dr. Francis Anstie. Fifty-two girls in the Royal Patriotic School at Wandsworth were attacked, within one week, by a disease characterized by two main symptoms, namely, by lipothymia with coldness and lividity of

the face and limbs, and by great pain in the belly, which was tender also to the lightest touch. Four children died, and dissection of the bodies revealed peritonitis. One fatal case suffered from diarrhoea with rice-water stools, and was examined by Dr. Anstie. He pricked his finger, and died six days afterwards. A remarkably similar epidemic which occurred in a charity school for girls at Edinburgh, called the Merchants' Hospital, is described by Abercrombie. Peritonitis, by itself, would probably always be attended by the constipation of paralysed intestine: and surgeons note great constipation in cases of peritonitis following abdominal section. When diarrhoea concurs, modern doctrine would lead us to infer the coexistence of an infection of the intestinal mucous membrane, especially that of the colon.

iii. *Ileus.*—A higher degree of intestinal paralysis is marked by the state called ileus: a word which has been sufficiently constant in its meaning from the earliest times. It denotes disorder of an intestinal function, namely of the peristaltic function, and implies inability on the part of the intestine to propel its contents. The kind of ileus which concerns

us here is that which is due to inflammation of the intestines, or enteritis. I have already remarked that the term enteritis originally meant an inflammation of the peritoneal coat of the bowels. It was Broussais who most unwarrantably perverted the meaning of the word, and who used it to signify an inflammation of the mucous membrane of the intestines: one out of many instances showing the degree to which corruption of our technical terms has been carried. They who continue to use the word enteritis in its original sense do no worse than follow the example of Pemberton, Abercrombie, Graves, and Watson. For those who desire a name to express inflammation of the intestinal mucous membrane, the terms eso-enteritis, muco-enteritis, enteritis mucosa have been invented.

The sign of ileus is vomiting becoming faecal. The Father of physic has well described the course of events; the matters vomited being first mucous, afterwards bilious, and lastly faecal. Until the vomit become faecal, or at least porraceous (meaning thereby an appearance like chopped grass or spinach), it is impossible to affirm the existence of ileus. The concurrence of constipation is no help: and indeed, on

the other hand, faecal vomiting may be attended by the evacuation of small loose stools, resembling in colour and other respects the pale, uniform, pasty intestinal contents found in cases of mechanical obstruction.

iv. *Incision.*—So that pain and the signs of intestinal paralysis are the only evidences of acute peritonitis. It were much to be wished that the disease afforded physical signs such as are usually present in chronic peritonitis. There is, however, a surgical sign of the disease, a sign truly pathognomonic, which we must not hesitate to elicit when a patient's life is in jeopardy, and when accurate diagnosis is essential to rational treatment: I refer to direct observation of the state of the peritoneum as rendered possible by incision through the abdominal walls (p. 213).

II. *Universal Symptoms.*—Let us now pass on to consider the remote or universal effects of peritonitis. i. And first of *Fever.* No symptom more uncertain than this: the temperature being sometimes high and reaching 105° or more; usually but moderately raised; whilst in other cases there may be no fever at all, so far at least as can be judged by a thermometer in the mouth or axilla. This apyrexia is a remark-

able symptom when present, as it sometimes is, from first to last in peritonitis the most intense and fatal. We are tempted to speculate upon the cause of so strange a phenomenon; whether an ordinary febrific poison be not produced by the inflammation, or whether an extraordinary febrifuge poison be produced: at present we cannot do more than note the fact. Apyrexia sometimes becomes algidity; an important sign of the lipothymial state, to which I shall soon refer.

ii. *Putridity.*—More certainly due to an infection of the blood are the putrid or septic symptoms which sometimes happen. When we bear in mind what Bichat pointed out, that the peritoneal cavity is a lymphatic sac with a most extensive absorbing surface and an extraordinary power of absorption, the wonder is that these symptoms do not occur oftener. I will illustrate this form of disease by the case of a young man who was running along the street and got a heavy fall, which was the only discoverable cause for the acute peritonitis that occurred within forty-eight hours. Delirium and diarrhoea were associated with the abdominal pain and vomiting

of the first few days. On the sixth day he complained chiefly of pain in his joints: his feet and one shoulder were swollen and excessively tender. The skin over the feet, wrists, and ankles was red in patches. His urine was highly albuminous, but no blood corpuscles or casts were found in the sediment. The diarrhoea continued: he lay in a state of typho-mania, that is, of delirium with consciousness much impaired: he had a greater tendency to chills and occasional shivering than is usually met with in cases of peritonitis; the temperature varied between 102° and 105° until a few hours before death, which occurred on the eighth day. At the post-mortem examination nothing was found but peritonitis and its results; its cause was not found.

iii. *Lipothymia.* I will next speak of that marked failure of the vital functions (that is to say, of the circulation, respiration, and body-heat) which very often accompanies peritonitis. It is a matter for surprise and regret that we have no term in common use to express this set of symptoms. No English word being precise enough, I suggest that we resuscitate the Greek word, 'lipothymia,' to denote defectio

animae, this failure of the vital constitution; whether it be attended or not by lipopsychia, defectio animi, or failure of the animal functions, marked by coma, delirium, or both. Sudden lipothymia is syncope or swooning; syncope due to injury is shock. Lipothymia is manifested by a small, weak, and sometimes irregular pulse, by weakness of the heart-sounds, by shallow breathing, by lividity with pallor (deathly paleness), and by algidity or failure of the body-heat, at least so far as the skin is concerned; the inner heat, as measured in the rectum, may or may not fail to a proportionate degree. In peritonitis (apart from perforation) lipothymia sometimes marks the whole course of the disease (witness the Wandsworth epidemic to which I referred a short time since): and when to lividity, coldness of skin, and a weak small pulse, are added diarrhoea with watery stools and suppression of urine, the resemblance to cholera is great indeed. But more frequently lipothymia occurs only towards the end of life; and then it may assume, as far as the body-heat is concerned, the form of lipyria (another ancient word which might be revived with advantage), that is to say, while the

skin, especially of the limbs, is quite cold, the temperature of the inward parts, as measured by a thermometer in the rectum, is much above the normal, it may be 105°, a very bad prognostic sign in all acute diseases, and a plain proof of extreme weakness of the circulation.

Another sign which sometimes attends this final lipothymia, this mortal agony or struggle with death, a sign which has attracted the notice of physicians from the earliest times, is the disappearance of pain and suffering whilst the patient remains perfectly conscious: yet all the symptoms of vital failure persist; and he only, whose attention is fixed upon the local signs to the neglect of the prognostic condition of the whole patient, can be surprised by what will seem to him to be a sudden and unexpected death. It were curious to inquire into the causes of this cessation of pain, whether it be due to cessation of cramp, whether an anodyne poison be produced in the course of the disease, whether the lipothymia arrest the nutrition of the nerve-endings, or whether the sensorium for pain be similarly affected.

Still more remarkable, although much less common,

is the case of peritonitis attacking a healthy person, lipothymia supervening in the course of a few hours from the beginning, and any local signs of abdominal disease disappearing at the same time. The patient, when first seen, makes little or no complaint of the abdomen, it is not swollen and can be pressed deeply without causing pain. But the skin is cold, the heart beats very frequently, no pulse can be felt at the wrist, the respirations are very frequent, the secretion of urine is suppressed. The mind is affected little or much. The patient dies on the first or second day of illness: at the post-mortem examination, acute peritonitis is found, but not necessarily perforation of the peritoneum, or disease of any other abdominal structure.

Facies.—The last sign of acute peritonitis which I shall notice is that afforded by the look and expression of the face. These signs and such as these, which constitute the prognostics so much trusted by the earlier physicians, can be learnt in no other way than by a long familiarity with disease. If I allude to the countenance which still goes by the name of facies Hippocratica, it is only to remark that Laennec

has endeavoured to walk in the footsteps of his great predecessor, and to depict an expression of face often seen in peritonitis and other severe abdominal diseases. This peculiar look, which he calls 'face grippée', is due chiefly, if not wholly, to the features being drawn upwards, so that the forehead is more or less wrinkled, and the naso-labial furrows are drawn inwards and upwards towards the root of the nose and inner canthi of the eyes. I have compared Laennec's verbal picture with the living patient, and have found it to be true to nature: but not universally true, not present in every case of acute peritonitis. Indeed I think that the face grippée denotes abdominal pain, and that it usually disappears with the pain, although the disease continue. But we must admit that the local suffering and local signs of disease may be very small, and yet the onset of peritonitis be denoted by a profound change in the expression of the patient's features. Surgeons remark this change when an operation is followed by peritonitis: physicians also when a perforation occurs in the course of typhoid fever.

Latent Peritonitis.—Now a few words concerning

latent peritonitis. I have already spoken of peritonitis which is latent in respect of its local signs only; peritonitis in which universal signs of disease, those namely, of alarming lipothymia, predominate to the exclusion of abdominal symptoms: the patient being killed in a day or two as if by the operation of a powerful venom. But peritonitis may be altogether latent, and manifested neither by local nor by universal symptoms: a form which is deuteropathic, intercurrent in the course of other serious disease such as ascites, renal dropsy, empyema, pyaemia, or typhoid fever; the peritoneal inflammation being revealed by the post-mortem examination only. What surprise we may feel at this latency diminishes when we reflect that the signs of peritonitis have little or no relation to the peritoneum, but depend upon disorder of other viscera, adjacent or remote. Suppose the onset to be marked by vomiting: what is there distinctive in this: in what disease does vomiting not occur: is not the stomach the great sympathizer with distress in any part of the body? Add some pain in the belly and how does this help us? Possessing no direct physical signs of peritonitis, and being compelled to rely upon

indirect disturbance of the functions of other viscera (for the peritoneum itself has no manifest functions), we cannot expect to discover the presence of peritonitis in cases such as these.

Types.—After analysing the symptoms of peritonitis I might endeavour to arrange them so as to form concrete pictures of patients suffering from that disease: but I will say no more than this, that according as one or other symptom prevails so does the appearance of cases of peritonitis differ; and the differences are so great that we have to admit divers forms or types of the disease. We cannot manage with fewer types than three, namely, peritonitis characterized by pain, or by ileus, or by lipothymia: for peritonitis discovered only after death cannot be admitted to be a form of disease as looked at from my present point of view. A given case of peritonitis is by no means necessarily constant to one type throughout: for instance, painful peritonitis may pass into ileus: and moreover the local and universal symptoms may be variously mixed. But the only reason I have for referring to facts so obvious is to be assisted by these types in comparing the signs of acute peri-

tonitis with the signs of other peritoneal affections: which I will now proceed to do.

i. *Chronic Peritonitis.*—Peritonitis which is essentially chronic in its course, sometimes sets in suddenly, and thus resembles at first the acute disease. This is often observed in the commonest kind of chronic peritonitis, the tubercular: when, as I suppose, a sudden infection of the peritoneum takes place. The forms assumed by this acute onset of tubercular peritonitis are the same as those I have just discussed. That most often met with begins with pain, vomiting, and sometimes diarrhoea, and is followed in a few days by meteorism which may become very great. Lipothymia in a high degree may attend the choleric symptoms. The least common type, which assumes the form of ileus, deserves especial notice on account of its close resemblance to mechanical obstruction of the bowels: a resemblance so close that abdominal section has been performed in such a case under the notion that the patient was suffering from a strangulated hernia (see p. 168).

ii. *Haemorrhage* into the peritoneal sac is another form of peritoneal disease in which we meet with the

same types. The painful form is well illustrated by the case of 'a woman, twenty-nine years old, who was brought to the hospital in a most alarming condition, although her illness had not lasted longer than a few hours. She had been suddenly attacked by great pain in the lower belly, and the pain had steadily increased. She had the face grippée and was deadly wan: her breathing short and frequent, interrupted by hiccup, her pulse hurried and very weak, her belly distended and tender. She died within forty-eight hours from the beginning: at the post-mortem examination, there were found in the peritoneal cavity nearly three pints of liquid blood which had come from one of the Fallopian tubes: no peritonitis.' How peritoneal haemorrhage may be attended by ileus is shown by the case of a man, twenty-two years old, who was admitted into St. Bartholomew's Hospital in an extreme state of shock, following a fall off the tail-board of a van in motion. He complained of great pain at the pit of the stomach, and soon after the injury he began to vomit incessantly. On the second day the vomiting continued to be very frequent: he had a great desire to defaecate, but passed nothing:

his belly was very hard and tender: the urine was suppressed: his temperature was 99·6°. On the third day he was worse: abdominal section was performed: the peritoneum was found to be full of dark liquid blood, and nothing more was discovered. On the fourth day he died: the blood came from a rent liver.

iii. *Perforation of the Peritoneum.*—A much more common acute affection of the peritoneum is that which I mention in the last place, namely, perforation or rupture of the wall of a canal or cavity or hollow viscus, and escape of its irritant contents into the peritoneal sac. When we seek to classify cases of this kind, we come upon the three or four types of which I have already so often spoken: the type characterized by pain, or by ileus, or by shock, and the latent type. But before depicting them, let us ask whether peritoneal perforation yield any peculiar signs? None; unless peritoneal tympanites ensue: and this depends, of course, upon the perforated cavity, whether it contain air or not. In the case of peritoneal tympanites, physical examination usually affords more or less probability of the presence of air in the peritoneal sac, but seldom an absolute certainty.

The distension of the belly is often very great, and greater in perforation of the intestine than of the stomach: when the distension is very great, the skin is tense and shining to a degree seldom seen in intestinal tympanites. Visible coils of intestine or vermicular movements are decisive evidence of intestinal tympanites. Absence of the liver dullness to percussion is a useful, but not altogether a trustworthy, sign of peritoneal tympanites: for, when the intestines are extremely distended with air, they may come to lie between the liver and abdominal wall in front, and I have known this to happen even when the liver was enlarged to twice its natural size. On the other hand, adhesion of the liver's convex surface will obviously prevent the disappearance of its percussion dullness, even though the peritoneal cavity be full of air. The signs afforded by auscultation are less important, because they are common to all great accumulations of air within the abdomen, whether contained in stomach or intestines, or free in the peritoneal cavity. The chief sign is the bell-sound discovered by Laennec. In his *Auscultation Médiate* he says that by percussing lightly and at the same

time applying the stethoscope near by, we shall hear a silvery resonance: clearer, he thinks, in peritoneal than in intestinal tympanites. I cannot do more than just mention the other auscultatory signs of a large air-containing cavity, and which are sometimes present in peritoneal tympanites, namely, an amphoric quality in the respiratory sounds heard over the abdomen, metallic tinkle, and succession splash. A valuable sign is yielded sometimes by an escape of air into the cellular membrane of the abdominal walls: this fact also is alluded to by Laennec ('a sort of dry crackling is felt upon pressure' he says), and is, taken together with the signs aforesaid, peculiar to peritoneal tympanites as contrasted with the intestinal. Or the subcutaneous emphysema may be still more extensive. To conclude this topic of physical signs I will remark that, although their presence is a great help to diagnosis, their absence proves nothing. Perforation of a part of the alimentary canal (for instance the appendix vermiformis) may occur, may be followed by acutest peritonitis, and yet may be unaccompanied by peritoneal tympanites: nothing escapes from the rupture but offensive and poisonous pus.

With respect to the symptoms of peritoneal perforation, all cases may be referred to the four types so often spoken of, those characterized by pain, or by ileus, or by shock, and those not characterized at all, the disease being latent; latent, that is to say, so far as concerns the diagnosis.

a. First, of perforation characterized chiefly by *Pain.* A lady had ailed for some time from pain in the stomach and the side, but she seemed to be otherwise in good health. One day after dinner, she complained several times of pain: she drank some succory water as a stomachic, and putting the cup down with one hand, with the other pressed her side, and said in a voice which betokened much suffering: 'Ha! what a stitch in the side; what pain; I cannot bear it.' Speaking these words she flushed, and, a moment afterwards, turned pale with a wan lividity which alarmed everybody. She kept crying out, and begged to be carried away, for she could no longer hold up. Supported by the arms of others, she managed to walk, but with difficulty and bent double. Put to bed, she cried out more than ever that the pain in the pit of her stomach was past belief: she tossed

from side to side. A physician was fetched who pronounced her complaint to be colic, and who prescribed suitable remedies. But the pain continued; she said that her suffering was greater than could be conceived, and that she would die. All this occurred in less than half an hour. Whatever she swallowed made her retch: she brought up only a little mucus mixed with food. The efforts to vomit and the excessive pain threw her into a state of exhaustion which resembled repose: but she told the bystanders not to deceive themselves, that the pain was as great as ever, and that she had no strength left to cry out. She heard some one remark that she was easier, and she said: 'That is so far from being true that were I not a Christian I would kill myself, so great are my sufferings: it is wrong to wish evil to any,' she added, 'yet I would that somebody could feel for a moment what I feel, so as to know what my pain is like.' Her pulse became imperceptible, her limbs cold: her friends anxiously asked if nothing more could be done; they suggested a score of remedies, and at last, her physicians, in sheer desperation, made an attempt to bleed her, but the blood would not flow. They

gave her some broth, for she had taken no food since dinner: she no sooner swallowed it than her sufferings (if not her pain) increased: she complained that her stomach was filling up: death was depicted on her face: the last struggle was short, and after two or three convulsive movements about her mouth, she died nine hours from the beginning of her illness.

Would you not suppose that I have set before you a living picture in words, taken from the pages of a modern Aretaeus or of Sir Thomas Watson; or have you already recognized that I have been reading an account of the last hours of King Charles the First's daughter, Henrietta, Duchess of Orleans? An account written by one of her ladies in waiting, Madame de la Fayette, a hundred and fifty years before ulcer of the stomach was discovered, so we may say, by Cruveilhier. That the patient died from perforation of such an ulcer was proved by examination post mortem, although her physicians did not understand what they saw, and it was left for Littré to explain the real nature of her illness. I have always thought that reports of the kind just read, drawn up at the bedside by persons of keen intelli-

gence but with no medical knowledge, are of great value. Such reports are true to nature, for the reporters have no preconceived notions which discolour and distort the appearances of things. Moreover these observers see the sufferer and nothing else: but we physicians, on the other hand, in our eagerness to discover abstract signs of disease, and to arrange them into that wholly artificial notion which we call the diagnosis, are apt to overlook the patient.

The physicians of Madame said that she was suffering from colic, and that a wretched pulse and cold limbs, such as hers, were common in that disease. I likewise have stood by a patient writhing under the throes consequent upon perforation of stomach or duodenum, and have asked myself whether there was anything either in the pain or its concomitants which might not occur in intestinal colic, and have been compelled to admit that there was nothing. This difficulty in diagnosis is not to be wondered at if the pain be, as is very likely, in some part due to cramp or painful spasm of the intestines and stomach, and perhaps of the abdominal walls also.

Yet our diagnosis may reach a high degree of

probability under such conditions as these:—the ruptured organ being more often either stomach or duodenum than any other, there may have been some forewarning symptoms of ulcer of one of those parts: the perforation occurring suddenly, so does the pain, and especially after a full meal or an effort or both. The very acid contents of the stomach or upper half of the duodenum poured into the peritoneal cavity are excessively irritant, and the pain is violent in proportion, being far beyond the pain whereof the sufferer has had any experience or conception. The abdominal walls are contracted, tight, and hard, and often very tender. The pain will continue without remission to the end, or will cease altogether, or will only diminish; as I said when speaking of acute peritonitis.

The associated symptoms may or may not assist the diagnosis. Vomiting, often present, is sometimes absent: some have thought that it is absent in perforation of the stomach especially, but the exceptions to this rule, if it be a rule, are many and of both kinds, namely, rupture of stomach attended by vomiting, and rupture of a part not stomach yet unattended by vomiting. Peritoneal tympanites will

ensue if gas escape into the abdominal cavity; but gas does not always escape even when some part of the alimentary canal is ruptured. Shock attends the rupture, and usually the lipothymia persists to the end. When perforation occurs in the course of a febrile disease, defervescence is often a marked sign of shock. Suppression of the secretion of urine is common and seems to be sufficiently explained by the vomiting and the lipothymia, and their necessary consequences, defective absorption and secretion.

β. The second kind of perforation, that characterized by *Ileus*, is less common, and occurs especially in disease of the appendix vermiformis. The discharge of virulent offensive matter into the peritoneal sac seems to stun the intestines, they neither feel nor move. A woman, aged twenty-two years, was admitted into St. Bartholomew's Hospital on March 8. She had taken, on the 5th, jalap and castor oil to relieve her habitual constipation: the bowels acted soon afterwards three times. Otherwise she was, so she and her friends averred, in perfect health, and quite free from pain or indications of disease in the abdomen or elsewhere. Her menses, due on the 5th,

did not appear. On the 6th vomiting began, and it continued at intervals up to the time of admission. The bowels had not acted. She was admitted on the evening of the 8th, and one of my surgical colleagues, who happened to be at the hospital at the time, came straight to my house and told me that a woman with obstruction of the bowels had just been sent in to be under my care, and he thought that the question of operation arose. We went to see her, and we found a woman with no look of suffering, with a warm skin, a temperature of 99·2° in the armpit, and with no symptoms of failure of the vital functions, unless indicated by a pulse of 144, which was however by no means weak or small. The abdomen was fat and moderately distended, the muscles were tight, but there was no tenderness excepting about the right loin: the right iliac fossa was carefully examined, but nothing could be felt. Examinations per vaginam, per anum, and for hernia detected nothing wrong. An enema had brought away faeces. She vomited dark green liquid without smell. The urine was scanty, it contained a trace of albumen, was turbid with scaly epithelium and highly granular cylinders

like renal tube casts, but there were no exudation corpuscles. The abdomen was opened: thin purulent liquid escaped, the small intestines were distended and purplish brown in colour. Examining the appendix vermiformis, we found a sloughy hole at its insertion into the caecum: the rest of the appendix much dilated, its lining membrane ulcerated and granular throughout, the outer surface covered with lymph. She died two or three hours after the operation. Nowhere any anatomical obstruction of the bowels.

Between this form of disease and painful febrile peritonitis there are all possible varieties in respect of association of symptoms: the ileus being attended by more or less pain, tenderness and fever. Peritoneal tympanites is often absent: any distension of the abdomen being due to acutest peritonitis, to intestinal tympanites and inflammatory liquid effusion.

γ. The third kind of perforation is characterized by *Shock*. In some cases, particularly in rupture of the stomach or duodenum, the shock kills within a few hours; and may be justly compared to the effect of a blow upon the pit of the stomach: though why the

shock of abdominal injury should be so especially profound, I will not undertake to explain. In other cases the patient lives a day or two, yet never rallies. A man, forty years of age, who was under treatment for a chronic ulcer of the stomach, became suddenly, at eight o'clock one morning, pale, pulseless and delirious (see page 192); he had evidently undergone a great shock. Throughout the day he continued to be delirious, consciousness never fully returned. Considerable reaction took place, his skin became hot, his pulse full and frequent; he retched a little but did not vomit. The same night he became comatose, and so died at eight o'clock next morning. I regret being unable to say whether the urine was suppressed or not. On examining the body, the ulcer was found to involve the pylorus, and to have perforated on the duodenal side thereof. The contents of the stomach were in the peritoneal cavity: but there were no signs of peritonitis, neither excessive vascularity nor exudation of lymph.

δ. Lastly, the perforation may be *Latent*: that is to say, unattended by any symptoms adequate to the diagnosis. Not that symptoms are utterly wanting;

this is seldom the case; there are more or fewer of those so often mentioned, pain, vomiting, lipothymia, and the rest, but they are rendered obscure by occurring in the course of a disease marked by no less serious disorders. The contrast between a person when in good health and when suffering from perforation of the peritoneum is great indeed: but when a patient has been exhausted by four or five weeks of severe typhoid fever, the occurrence of perforation may be a comparative trifle, so far as symptoms are concerned: a little pain in the belly, a little vomiting attracts no attention. Or there may be no pain, no tenderness, no vomiting, nothing but a sudden defervescence. Or again, a change in the patient's look is sometimes the chief sign. During a state of typhomania, in particular, the gravest intercurrent lesions often happen unsuspected.

But perforation, latent so far as symptoms are concerned, will sometimes yield one or more of the physical signs of peritoneal tympanites. For instance, in the later stage of typhoid fever, a rapid and great distension of the belly, such as to stretch the skin and make it shine, and attended by disappearance of the

liver dullness to percussion, is a tolerably trustworthy token of intestinal perforation, and is sometimes the only token. The liver dullness may disappear before the abdomen becomes distended.

Incision for the purpose of diagnosis. To conclude by referring once more to puncture of the peritoneum as a means for ascertaining the presence of inflammatory effusion, of gas, or of chyme. An incision is justified whenever the patient affords more or less trustworthy indications of acute peritonitis, and especially when there are reasons for believing that perforation of the peritoneum has occurred. Unless we can bring relief, the patient will probably die. An incision will not make him worse; the only objection lies in the natural dislike to an operation, however small. I wish I could believe that chloroform-sleep did no harm, but I fear that this drug has a depressing effect upon persons suffering from acute peritonitis. However, suppose a small incision made, and we find that the peritoneum contains pus, or air, or chyme, or blood, further operation now becomes a means of treatment which affords the patient the only chance of life.

XIV

SECTS IN MEDICINE[1]

THE subject of my address is 'Sects in Medicine'. I shall endeavour to make the following propositions clear unto you: That inasmuch as medicine is a part of philosophy, the sects in both are essentially the same. That these sects depend upon the original constitution of the human understanding, upon its native powers and weaknesses. And that inasmuch as the powers of the human understanding seem to be precisely the same now as they were when philosophy began, we may expect and we shall find that the sects are essentially the same in our time as they were in the early days of medicine.

The existence of sects implies differences of opinion, and differences of opinion imply imperfection of knowledge. There are no differences of opinion concerning

[1] Read before the Abernethian Society on June 20, 1889.

Euclid's propositions, the truth of his definitions and axioms being granted. Where knowledge is most imperfect, there are sects most numerous.

I said just now that medicine is a part of philosophy, and philosophy is full of sects, which are not even agreed upon the meaning of the word philosophy. The Stoics meant thereby the whole of knowledge; they divided it into six partitions: physics and theology, logic and rhetoric, ethics and politics. This is the sense in which Francis Bacon uses the word. But the great English school which is represented by Lord Herbert, Hobbes, Locke, Berkeley, and Hume, defines philosophy to be the theory of knowledge; in other words, philosophy explains wherein knowledge consists, explores the conditions of knowledge, and thus refers chiefly to man himself. A third school, which is represented by the Eleatics among the ancients, and by Spinoza among the moderns, deems philosophy to be 'the search for reality and unity, the effort of thought to gain a point of view from which the contrasts expressed by the terms One and Many, Universal and Particular, Infinite and Finite, God and Nature, shall be reconciled and harmonized';

that is to say, philosophy is the theory of the cosmos, the universe.

Man is a part of nature, therefore the knowledge of man is a part of the knowledge which the Greeks called physical (or natural) philosophy. I stop for a moment to point out that this is the reason why we are called physicians, for the knowledge of the human body is the most useful part of physics. Again, man is the most complex, most abstruse, and least understood part of nature. No wonder then that the science of man is overrun by opinions, by sects, by heresies, far more than infest any other part of natural philosophy. The same remark holds true of medicine, as being part of the science of man.

To speak now of medicine in particular, I say that it necessarily partakes of the diverse opinions which inhere in philosophy. Now, the primary and fundamental philosophic sects are two, the Dogmatic and the Sceptic. Dogmatists affirm that we can and do know; sceptics neither affirm nor deny. Observe, sceptics do not deny, else they would be dogmatists; a strict sceptic cannot even affirm that he neither affirms nor denies; he cannot go beyond the question,

'What know I?' But practically sceptics are deniers, and systematic scepticism (such as that of Sextus Empiricus) is full of dogmatism. In short, there are no absolute dogmatists or sceptics, and the truest way of putting the matter is to say that dogmatists tend towards affirmation, and sceptics towards doubt.

These two sects exist and always have existed in medicine. Every man is born with a natural bend towards one or the other. A very little thinking will convince you that dogmatism may assume an infinite number of forms, whereas strict scepticism can assume only one form, so that all that I have to say will relate to different kinds and degrees of dogmatism.

Moreover, I have already hinted that I shall base my remarks upon the medical sects which existed in the ancient world. For the powers and limits of human thought remain exactly what they were in the time of Thales, and nature mocks, nay she punishes, any effort to transcend them. The ancient sects exhaust all possible fundamental differences of opinion, and inasmuch as the story of the ancient world is completed and we can survey it from afar, we can comprehend it better than the world in which

we live. These ancient sects are reproduced in modern times. My object is to illustrate the sects of our own day, and I shall refer to ancient sects for this purpose only.

I say that all sects are dogmatical, generally speaking, but one sect was called especially *Dogmatic*; the other sects had other names. I will speak of the species Dogmatism in the first place. The Dogmatist seeks to understand what disease is; he compiles systems of medicine, in which he sets forth the aetiology, anatomy, and physiology of diseases, in order that from these pathological data he may deduce indications for treatment. In other words, his practice of medicine is reasoned from his theory of disease; he aims at a rational therapeutics. To translate the words of Celsus, 'They who profess rational medicine hold it to be necessary that we should know, first, the hidden yet essential causes of disease; next, the causes which are manifest; after these the natural actions (of the body, to wit, human physiology); and lastly, the internal parts (or anatomy).' Did you ask me to give an instance of this form of dogmatism, I could call to mind no more recent name than that of Boer-

haave, one of the most successful teachers that ever lived. From him proceeded not only Gaubius and the succeeding lights of the Leyden school, but also van Swieten, De Haen and the great Vienna school, and above all, Haller. No doubt his personal appearance, his jovial temper, and his eloquence did much, but the main element of his success lay in the fact that he had a system. Students were not repelled by a sceptic standing at the very door, but all things seemed clear and easy. His pupils' interest and attention were roused, and what more was needed? Even if the system were wrong, what matter? It served as an excellent cement of facts for the common class of men, whilst the Hallers were able, if they cared, to invent systems of their own. So far as I know, nobody has propounded a comprehensive dogmatic system for many years past. The reason seems to be that such a system requires the science systematized to be at a standstill, not to say dead. Knowledge in a ferment, expanding on all sides so much and so rapidly as during the past hundred years, must speedily burst the old bottle of any dogmatic system.

But another species of dogmatism, a form which is called *Methodism*, is far from being extinct. This sect is a revolt against the infinite multiplicity of the dogmatism which I have already discussed, and seeks for some simple principle which underlies all these innumerable particulars, and from which they may be deduced. Methodists are those dogmatists who strive to make the data of pathology and therapeutics as few as possible in number, and as universal as possible in extent. The dogmatist builds his system upon the greatest possible number of particulars; the methodist erects his inverted pyramid upon a single proposition. The reason of methodism lies in the weakness of the human mind, impatient of slow progress towards a goal which recedes as we go on, and wishing to find a royal road by which the end may be attained without passing through the necessary intermediate stages.

There have been methodists in medicine from the earliest times. One of the most ancient medical books which we possess is directed against a methodical sect. I refer to the Hippocratic treatise *On Ancient Medicine*, written about 400 years before Christ.

'They who, having undertaken to speak or write upon medicine, have first laid down a hypothesis for themselves, are clearly mistaken in much that they say': so opens this venerable document. The author then goes on to affirm that in medicine there is no need for any hypothesis, inasmuch as medical knowledge is gained by observation of particular matters of fact. He proceeds to illustrate this doctrine, and then attacks the hypothesis from which some methodists of his day sought to deduce the science of medicine. This hypothesis is no other than the ancient dogma—

> That hot, cold, moist and dry, four Champions fierce,
> Strive here for Maistrie, and to Battel bring
> Thir embryon Atoms.

'For hot or cold, or moist or dry is that which becomes injurious to man, and he who would treat a sick person properly must apply cold to the hot, hot to the cold, moist to the dry, and dry to the moist.' Well may the Hippocratic writer say that 'he cannot think in what manner those who advance this doctrine, and transfer the art from experience to hypothesis, will cure men according to the principle which they

have laid down'. But alas! my friends, this severe critic of hypotheses has a hypothesis of his own, else he would be hardly human. He rejects the dogma of the four primary qualities, and sets up in its place the dogma of humours. The famous humoral pathology appears here in its earliest form. 'All the complaints to which man is subject arise from the powers,' which he explains to be 'intense and strong juices'. He does not enumerate these juices, but his hypothesis soon assumed the form under which the humoral pathology governed the world for so many years, and indeed we may say still governs it. When a man is called sanguine, melancholy, or phlegmatic; when a patient complains of a bilious headache; when we speak of being in a good humour or a bad humour, we use terms which are a survival of the undying humoral pathology.

Celsus tells us that the name of Methodist was first given to a sect which was founded by Themison about a hundred years before Christ. But I have no intention of recalling the doctrines of that sect, nor those of the many methodic sects which have arisen in more modern times, have shone brightly for a time,

and have set for ever. I will illustrate methodism by the greatest living instance thereof, *Homoeopathy*. But I think that it has not yet lived long enough to enable us to discuss its doctrines in a spirit of impartial historical criticism. Time is the final critic in such matters.

The violent opposition which homoeopathy aroused when first promulgated can be easily understood. In the first place it broke utterly with medical tradition, and attempted a revolution in our department of knowledge like that which the French had just attempted in politics. Homoeopathy thus became what is worse than a sect, a schism; we may differ from our fellow men, we need not quarrel with them. Again, homoeopathy was burdened with an article of faith which seemed to be contradicted by the common sense, or common prejudice, of mankind. I allude to the doctrine of infinitesimal doses. To believe that a millionth part of a grain of charcoal or flint could possibly have any effect for good or for evil upon the human body, would seem to require a constitution of mind like his who exclaimed 'I know a thing to be sure and certain because it is impossible'.

Yet the human mind is naturally pleased by the wonderful, and especially by the wonderful in medicine. I often meet with these expressions in books which appear to be written seriously, that a certain drug acts like a charm, or like magic. I suppose we must give to persons who write thus the credit of not meaning what they say.

But that which makes homoeopathy to be a methodism is the dogma or war-cry contained in the proposition that like things are cured by like things. Proceeding to discuss this assertion, let me point out in the first place that the method peculiar to homoeopathy relates to pharmaceutics only. Homoeopathy has nothing to say to pathology, accepts it as it stands or ignores it; nor can I remember any addition made to pathological science by a homoeopathist: a fact remarkable when we bear in mind the great progress which pathology has made during the past century. Moreover, homoeopathy does not touch the most important parts of therapeutics. And here allow me to make a digression which will, I hope, be of use in clearing the ideas of some of my hearers. Our art relates to persons in health, to persons in

disease, and to persons who are in a neutral position, as it were, between health and disease, that is to say, to healthy persons exposed to disease. With regard to healthy people, our art teaches how to preserve them so, and this is Hygienics. With regard to sick people, our art teaches how they may recover their health, and this is Therapeutics. Lastly, our art teaches healthy people, who are exposed to disease, how they may escape it, and this is Prophylactics. Now, with reference to therapeutics in particular, I hope that nobody here thinks that it means the administration of drugs only. Therapeutics is a Greek word which answers to the Latin *medicina* or *curatio*, the treatment or cure of disease. And therapeutics consists of three parts; first, Dietetics or the management of the ordinary conditions of life for the patient, his food and drink, his clothing, his exercise and rest, his sleeping and waking, the air he breathes, his evacuations, and so forth. Next, Pharmaceutics or the use of drugs. And lastly, Surgery, Chirurgery, which includes whatever you do for the patient with your hands. Beginners sometimes ask wherein consists the distinction

between medicine and surgery; they might as well ask wherein consists the distinction between Wales and Great Britain: surgery is a part of medicine.

To return to homoeopathy: I say that its method does not touch the most important parts of therapeutics, namely, dietetics and surgery; and that homoeopathy is a doctrine of pharmaceutics only. Its formula, that like things are to be cured by like things, requires expansion before it can be discussed. What are the things compared and said to resemble each other? Doubtless the disturbance produced by a disease, and the disturbance produced by a drug administered to a healthy man. And the universal homoeopathic method of pharmaceutics is to give to a patient suffering from a certain disease that drug whose operation upon the healthy body most closely resembles the disease. This dogma is intelligible enough; the only question is whether it be true. No reasoning for or against the proposition is of any avail; no dialectics after the Socratic fashion as to the meaning of the words disease and similarity will help us; experience alone must decide. Appealing to experience, we must admit that some drugs do

good homoeopathically. I find, for instance, that small doses of arsenic will often check vomiting, and that small doses of castor-oil are a good remedy for diarrhoea. Homoeopathy does not profess to explain how these results are brought about; it applies its criterion, an inexplicable criterion if you please, and such experiences as I have mentioned tally with the rule. But now I have to go further, and to point out that, from a few particular instances in which drugs may be fairly said to act according to the homoeopathic canon, the universal proposition is deduced that homoeopathy is the only rule of pharmaceutic practice. Let us see what experience has to say to this exclusive and intolerant dogma. And I will begin by the remark that in all matters of natural philosophy I distrust universal propositions. I agree with Baglivi that nature is more subtle than the most subtle philosophy. I approve of the saying of Celsus, that the medical art knows of hardly any precepts capable of universal application. And coming to particular instances, my experience tells me that very few indeed of the most useful drugs act homoeopathically. I believe that our patients

derive much good from salicylate of soda and iodide of potassium and iron and quinine and bromide of potassium and mercury and digitalis, and aperients and astringents and alkalies and anodynes, and very many drugs which do not act homoeopathically. Indeed, for my own part I would repeat my conviction that very few of the most useful drugs can be deemed homoeopathic in any sense of the word.

The English mind is averse from methodism, both in philosophy and in medicine. None of the famous methodic systems have sprung up in England. Van Helmont and Stahl, Brown and Broussais, were not English. It probably was not an accident that homoeopathy arose in Germany in the high and palmy days of the transcendental philosophy, spinning the web of its sophistry from some such universal terms as substance or being; mere words: for 'words are the only universals, and there is nothing universal but words' (Hobbes).

I now pass on to consider another, yet similar, form of dogmatism which is characterized by the tendency to overrate the extent and import of a favourite dogma. The cause of this form of dogma-

tism lies in the small capacity of the human mind, unable to accommodate more than one thought at a time, and apt to see all things through the medium of this thought. Which thought becomes a dogma, very likely to be true so far as it goes: the fault lies in making it exclusive; for other dogmas, indeed an infinitude of other dogmas, are no less true. This fault is the source of innumerable sects and heresies. In ancient times the Pneumatic sect stands forth as an instance of the form of dogmatism now under notice. The pneumatists were so called because of the great (unduly great) stress which they laid upon the doctrine of the pneuma or animal spirits. Let me remind you that when any one speaks of being in good or bad spirits, in high or low spirits, he uses terms which imply the dogma of the pneumatists.

It would be easy, and wearisome, to accumulate instances of this logical fault of overrating a favourite notion: idols of the cave, to use Bacon's figurative language. Such an idol has syphilis been to many pathologists, who have seen all diseases through a syphilitic fog. A few years ago an able French

physician propounded the doctrine that rickets was a form of inherited syphilis; but observe, a foundling hospital in Paris was the field of his labours. His generalization was probably correct so far as his data went; but his experience related to a very narrow field; had he looked farther abroad, had he examined puppies as well as babies, he would have found that his opinion was exclusive, intolerant, and therefore wrong—a heresy, in short. Gout is another idol with strange power to make the mental vision dim.

Leaving pathology, I will draw an instance of this fallacy from therapeutics, and will speak of the sect of physiological pharmaceutists, or, as we will call them for shortness, *Pharmacologists*. This sect is at least as old as the days of Thomas Willis, who wrote in the reign of Charles II a remarkable treatise entitled 'Pharmaceutice Rationalis, or an Exercitation of the operations of medicaments upon human bodies'. The doctrine of the pharmacological sect is as follows:

Pathology is a part of physiology; the laws of the internal actions, or functions, of the human body are

the same both in health and in disease, although the conditions under which these actions proceed are different in the two cases. Ascertain the manner in which the healthy body is affected by a drug, or, in other words, discover its physiological action, and you have a principle to guide you to the use of the drug in disease. Given a disorder of a certain function of the body, called a disease; this disorder can be combated by the appropriate drug. Up to this point the pharmacologists walk hand in hand with homoeopathists; but at the next step they part company. They disagree upon two topics. In the first place, the homoeopathists content themselves with giving a drug to a healthy man and watching the result; they pay great attention to the effects of a drug given in poisonous doses. The pharmacologists aim at profounder knowledge than this, and rely chiefly upon vivisection as a means of attaining this knowledge. But supposing that a knowledge of the physiological working of a drug is attained one way or the other, the pharmacologists and homoeopathists differ utterly upon the principle which should guide us in the use of that drug in disease. The pharmacologists are

antipathists; they argue in this manner: given, for instance, a disease in which the contractions of the heart are too frequent, and given a drug which can lessen the frequency of these contractions, administer the given drug in a case of the given disease, and the contractions of the heart will be reduced to or towards the normal. I need hardly say that the homoeopathists argue in quite another manner; they apply their maxim of like curing like, concerning which I have already spoken. Nor have I time to discuss the doctrine by means of which some have sought to compose the strife between these contradictory sects: I refer to the theorem that the action of a drug given in small doses is the exact opposite of its action when given in large doses. If a homoeopathist employ small doses upon this principle he is obviously an antipathist in disguise.

To return to the pharmacologists: I say, in the first place, that physiology owes much more to medicine than medicine does to physiology. Nature and surgeons perform vivisections for us. The greater and better part of what we know concerning the functions of many organs of the body, is derived from

pathological observation and not from physiological experiment. Large tracts of physiology are regions unexplored. What more important operation can there be than the conversion of food into blood? And yet how little can physiology say for certain about the process! Some years ago a gentleman brought his daughter to see me on account of enlarged glands in the neck. Whilst I was prescribing the treatment, he suddenly asked me what was the use of the said glands. I at once called to mind the story they tell of Razes, who became blind in his old age. At first he thought of having his eyes operated upon, and he consulted a surgeon for that purpose. But when he found that the surgeon could not tell him how many tunicles the eye possesses, Razes reconsidered his intention and threw it up. Yet I believe that I gave my patient good and useful advice concerning the treatment of her disease, although I must confess that I felt painfully ignorant of the functions of lymphatic glands. When the greatest of discoveries in physiology had been made, namely, the circulation of the blood, thoughtful men were surprised to find that no corresponding improvement

in medical treatment followed.[1] So little do therapeutics depend upon physiology.

Again, physiological pharmaceutics deal with nothing but the manifestations of disease, its signs and symptoms; which yield important indications for treatment no doubt, but which constitute by no means the only or the most important guides to therapeutics. Many of our most valuable drugs are specific, that is to say, they seem to act directly upon the more original and occult effects of the disease, which escape our anatomy and physiology; unless it be that these specific remedies act directly upon the specific cause of the disease, which seems not always to be the case, at least in the sense of destroying or nullifying the cause: they modify or alter its action in some way unknown, and therefore are sometimes called alteratives.

Again it is not possible to predict from the operation of a drug upon a healthy body what the effect

[1] 'Doctor Harvey gave the first credit, if not rise, to the opinion about the circulation of the blood, which was expected to bring in great and general innovations into the whole practice of physic, but it has had no such effect.' Sir William Temple: *Of Health and Long Life*; written about 1680.

will be upon a diseased body, simply because the conditions are not the same in both cases. Obviously no experiments upon the healthy could discover that iodide of potassium is a remedy for some forms of syphilis.

Lastly, physiological experiment has hitherto contributed little to practical therapeutics. Indeed, its indications have been more often erroneous than not. The conditions of disease are very complex, and require much more than such physiology as ours to make them understood.

Bordeu tells an amusing tale which will serve to wind up what I have said about the dogmatists who aim at a rational system of medicine. Chirac saw a patient with three of his medical brethren, whose master he deemed himself to be; for Chirac, like Thessalus, the Roman physician, loved to be called the conqueror of physicians. The patient, for eight-and-twenty days and more had subsisted upon chicken tea and barley water only. He was hungry, but waited a long time before he durst say so; at last, compelled by necessity, he imparted the fact to one of his physicians who seemed the least to agree with

the severe and terrible method of Chirac. Chirac, hearing of his patient's wishes, and seeing that the other physicians were disposed to relax the treatment so far that one of them would allow a little mashed sweetbread, another, two spoonfuls of soup, and the third, the yolk of an egg,—Chirac, after mature deliberation, declared that the patient might take some broth, seasoned with two pinches of parsley. To such lengths will dogmatism and rationalism and credulity go.

I come now to the *Empiric* sect, much less dogmatic than any of the sects I have mentioned hitherto. This is the sect towards which I myself have the most kindly feeling, being led thereto, no doubt, by the hand of nature. In Celsus you will find a critical account of ancient empiric doctrines; indeed the treatise of Celsus himself is an admirable instance of empiric medicine. If you ask me for a modern author thoroughly empirical, I give you the honoured name of Heberden. But what characterizes empiricism? It relates to therapeutics only; and an empirical physician argues thus: My patient is suffering from such and such a disease; I treat him in such and such

a manner, because my past experience of patients affected with this disease has convinced me that the mode of treatment which I adopt is the best I know of. I have no other reason for treating him in this way. What better reason than experience would you have? No one feels more deeply than I the truth of the aphorism of the Father of Medicine that experience is fallacious and judgement difficult; but this is a part of human frailty, and we have no better guide. In particular you must not ask me much concerning the manner in which drugs act; I do not know how iodide of potassium does good in syphilis, and if you were to undertake to tell me, I could not believe you in the present state of our knowledge. Is this to despise knowledge? On the contrary my only wish is that, in so serious an affair as medicine, my knowledge should be true. It is my bounden duty, and I desire nothing more than to increase my knowledge on all hands, and thereby to attain the ancient aspiration of our hospital, 'to bring health or ease to my poor patients.' I like the tale which Plutarch tells of 'one that cavilled upon a time with Captaine Iphicrates, and by way of reproach and

minding to prove that he was of no reckoning, demanded what he was? For (quoth he) you are not a man at armes, nor archer, nor targetter. I am not indeed, I confesse (quoth Iphicrates), but I am he who command all these, and employ them as occasion serveth.' In like manner the empirical physician says, I am ready to accept help from any source, from physiology and pharmacology, but also from mechanics, optics and similar sciences, from bacteriology, electricity and chemistry, nay very gratefully from cookery, upholstery, ironmongery, and indeed from any source.

The method of empiricism begins by compiling a history of diseases, the result of the most assiduous, minute, and complete observation and examination possible of sick people. These particular facts are classified so as to constitute more universal types of disease, which serve as a standard of reference. Bearing these types in mind, the empiric proceeds to examine a patient, no less minutely and completely; this is the autopsy. And this done, the patient's disorder is referred to that generic type of disease which it more or less closely resembles; this is the analogy or diagnosis: a most important affair for the

empiric, inasmuch as his line of treatment depends thereon. So that the empiric would almost agree with him who exclaimed that the first part of treatment is diagnosis, and the second diagnosis, and the third diagnosis. After the diagnosis comes the fourth and therapeutic stage of the method, in which lies the essence of empiricism, namely this argument: Because my patient's disorder corresponds with such a type, therefore the treatment is such as experience has shown to be suitable in that form of disease. 'This was the method of Heraclides Tarentinus, the most famous of empirical physicians, who, according to Galen, never said anything that was not true, not even on behalf of his sect, and who recommended nothing which he himself had not tried' (Bordeu).

You will have discerned the faults of empiricism. In the first place, it is 'arena sine calce,' or, as we may say, bricks without mortar. It consists of individual truths with nothing to make them adhere, no hypothesis to hold them together. The empiric is essentially asystematic, he writes aphoristically, he is the ant which gathers facts but does not transmute them. Another great fault of the empiric is this, that

in his eager search for knowledge which he sees to be immediately useful, he overlooks much, the usefulness of which does not at once appear. Not loving knowledge for its own sake, preferring fruit to light, he meets with an appropriate punishment, his harvests are scanty. Well for him that all physicians are not empirics.

You will rejoice when I tell you, my friends, that I have now come to the last sect which I shall mention, the sect which most closely approaches scepticism; I refer to the *Expectants*. The fundamental principle of this sect is a truth which is full of consolation for both patients and physicians, to wit, that many of our disorders spontaneously tend to recovery. Our body, which turns external things, food, drink, and air, into means of its own preservation, can likewise overcome the noxious influence of disease. The maxim of the expectants is that more diseases are cured by patience than by drugs, and that it is better to stand still than to go on groping in the dark. Contrast with this the dogmatic maxim that a doubtful remedy is better than none at all. The method of Hippocrates, which was largely expectant, was deemed by Asclepiades, a stout

methodist, to be little better than meditation upon death. But an expectant physician will reply, in the words of Bordeu: 'Methinks I hear nature cry aloud, Be not too officious with your help; leave the business to me: 'tis I and not your drugs that work the cure. When to you I seem to be most stormy, I myself can best save myself, if you have not robbed me of my powers. Far better to cast all your care upon me than to try doubtful remedies. Behold the true catholicum, the panacea sought for by all the sects.' Bordeu tells us that Stahl, in his old age, was so deeply convinced of nature's power to control disease and of the uselessness of drugs, that he came to order nothing, for all sorts of disorders and diseases, more than a few grains of sea salt. And now that we have reached what would seem to be the extreme limits of scepticism, let me point out to you that the greatest sceptics do much for their patients, and that all these doubts and all these sects relate to drugs and to hardly anything but drugs. They are the cause of our disputes and our differences. We agree, for the most part, upon the principles of hygienics and prophylactics, and speaking of therapeutics proper, there are no sceptics

in dietetics and surgery. It is pharmaceutics which is the weak point of medicine, and which will probably always be its weak point. And yet it is that, unfortunately, upon which the mind of the laity is most strongly set.

The fault of the expectants is the old fault of mankind: they carry things too far; their principle is true, but not the whole truth. Drugs are often of little use; drugs may be given so as to be baneful; this we may confess, and yet refuse to go to the length of affirming that drugs are never of any use. Small as our knowledge of pharmaceutics is compared to what we would wish it to be, yet men have taken more than two thousand years to accumulate that knowledge, and whoever would cast it away as worthless, because it is so imperfect, could not be deemed wise. Drugs are of use, sometimes they are of great use; and all honour to those who seek for more knowledge in this part also of medicine, its most difficult, most backward, and most disputed part.

XV

CLINICAL APHORISMS

COLLECTED BY DR. THOMAS J. HORDER

'Il faut voir, toujours voir, des malades. Ces matériaux confus, que l'on amasse sans ordre et sans méthode, sont pourtant d'excellents matériaux; inutiles aujourd'hui, vous les retrouverez plus tard enfouis dans les trésors de votre mémoire.'—TROUSSEAU.

I.—OF SOME PULMONARY PHYSICAL SIGNS

1. No other terms convey any information about the breathing sounds than those in the following table:—

Breathing may be	i. Vesicular.	i. Ordinary.
		ii. Weak.
		iii. Loud (= Puerile).
	ii. Bronchial.	i. Ordinary.
		ii. Cavernous.
		iii. Amphoric.

Distinctions, which correspond with no definite physical condition of lung, make a show of profound

and accurate knowledge, but really obscure it. They are idola theatri.

2. Intense bronchial breathing is rightly called cavernous because in most instances it indicates cavity. Hence the condition is present in (i) tuberculous disease, (ii) dilatation of the air-tubes in emphysema, or (iii) cirrhosis of the lung, with dilated air-tubes. The co-existence of dullness would exclude (ii), much sputum would suggest (i), and discovery of tubercle bacilli would confirm it.

3. The screaming of young children rather helps than hinders auscultation of their lungs, for we thus obtain the signs afforded by deep inspiration and vocal resonance, and especially bronchophony which is often the most important sign of pneumonia.

4. In pleural effusion there is sometimes hardly any breathing sound to be heard, and sometimes there is loud bronchial breathing. If we accept the view that the breath-sounds are all produced at the glottis, then, bearing in mind that both solid lung and fluid are good conductors of sound, we shall rather wonder that the sign of bronchial breathing is not always met with in these cases.

5. 'Consonating rale,' termed 'cavernous rale' by Laennec—a bad name, because it implied that the sound was always produced in a cavity—indicates that the rale is produced either near consolidated lung-tissue or in a cavity.

6. Children are sometimes thought to be the subjects of pulmonary phthisis when post-mortem examination shows no tubercles, but only cirrhosed lung and dilated air-tubes.

7. There is no disease of the chest in which the signs are more distinctive than in pneumo-thorax, and yet there is no disease which is more often overlooked. The observer, finding the percussion-tone natural, assumes that the respiratory organs are natural.

II.—OF PHTHISIS

8. Phthisis at the bases of the lungs is not uncommon, but its existence is sometimes overlooked because the apices alone have been examined.

9. In any case of phthisis the disease is more extensive than the physical signs would seem to indicate.

10. Most cases of confirmed phthisis progress more rapidly, and terminate sooner, than is expected. If physical signs are present, the probabilities are against complete recovery; but if the disease is detected before this, there is hope that it may be cured.

11. Before the appearance of physical signs it is the presence of some or all of the following facts which leads to a diagnosis—haemoptysis, cough, loss of flesh and colour, slight rise of temperature, and hereditary liability to the disease; but above all, detection of tubercle bacilli in the sputa.

12. Therapeutics must begin before physical signs have developed; for if you wait for physical signs, you wait too long.

13. Always say three things to a patient whom you suspect to be phthisical—

(i) Get yourself weighed—by the same machine each time—to see if you are losing weight.

(ii) Use a thermometer two or three times each evening to see if there is any fever.

(iii) Save your sputa to be tested (for bacilli).

If, besides auscultation and percussion, these three

points give negative results, you may infer there is no phthisis.

14. Never give a definite opinion as to how long a patient suffering from phthisis will live; for the only certainty is, that if you do, you will be wrong.

15. Almost every chronic affection of the apex of the lung is tubercular in origin.

16. Phthisis may begin as bronchitis, as pneumonia, as pleurisy with or without effusion, as pneumothorax; and in either case the beginning may be sudden.

17. Tubercular phthisis, going on to the formation of cavities, is not extremely uncommon even in infants under a year old.

18. The diagnosis of phthisis is peculiarly difficult in young children, because their expectoration can seldom be obtained.

19. The absence of physical signs of disease, in some cases of slowly progressive pulmonary consumption ending in death, is most remarkable.

III.—OF HAEMOPTYSIS

20. The commonest cause of haemoptysis is phthisis;

the next commonest cause is disease of the heart, which leads to congestion or to embolic infarction of the lungs.

21. When blood is brought up, if the sputa are themselves bloody, the blood has come from the lungs.

22. Fatal haemorrhage from the lungs is *fluor sanguinis*: a large quantity of unmixed blood gushes up, and the patient dies from loss of blood or from suffocation, before any remedies can be used. In the usual case of *sputum sanguinis*, in which blood mixed with mucus is coughed up sputum by sputum, the patient seldom dies, however abundant the bleeding.

23. Haemoptysis sometimes occurs, on and off, for many years—all through life, it might almost be said. In these cases, it probably is due to the presence of a small cavity, often not larger than a cherry, and giving no physical signs on examination of the chest.

24. Haemoptysis during an attack of asthma with bronchitis may be very great, and yet not dangerous.

25. Haemoptysis is not uncommon at the beginning of an attack of pleurisy with effusion; it is then probably due to collapse and congestion of the lung.

26. In a young man an attack of haemoptysis is quite sufficient indication for treating him for phthisis. It is not so in the case of a young woman. Women bleed much more easily than men, so that considerable importance should be attached to the question of sex. Again, in the case of a young man, it is not necessary that the sputa should be wholly coloured by blood; a few streaks of blood, like threads of scarlet silk, are sufficiently characteristic.

27. The treatment of haemoptysis by drugs is not very satisfactory. The best drug is ipecacuanha in emetic doses; but it should be reserved for the more serious cases. Gallic acid, though given in sufficiently large doses to produce a green colouration of the sputa, thus proving it to have reached the affected region, does not stay the haemoptysis. Ergotin seems sometimes to be of use, but at other times conspicuously fails. Opium is of value here as it is in all cases of haemorrhage. But the patient who was wont to treat his own attacks of haemoptysis by 'going to bed, sucking ice, and feeding on milk', summed up the main points of treatment.

IV.—OF BRONCHITIS AND EMPHYSEMA

28. An ordinary case of bronchitis is not febrile for more than a week or so. Later than this the temperature becomes a valuable sign in diagnosing the disease from phthisis or scattered tubercle.

29. Collapse of a large part of lung occurs in children from very slight causes; especially pulmonary catarrh. Hence when signs of consolidation are found in a young child we must always remember that they are possibly due to collapse.

30. I have satisfied myself that bronchitic signs may be wholly restricted to one lung, and the condition still be mere bronchitis. But when this is the case, there is always the suspicion that something worse is at the bottom of the condition—i.e. tubercle.

31. There are no more potent causes of chronic bronchitis than alcohol and tobacco.

32. Diarrhoea setting in spontaneously in a case of bronchitis relieves the pulmonary complaint; but do not attempt to imitate nature by inducing diarrhoea in treating a case of bronchitis, for purgation does no good.

33. Chronic bronchitis and emphysema may simulate asthma in the character of the dyspnoea, the

attitude of the patient, &c. When this is so, it may be of use to try anti-asthmatic remedies.

34. Progressive bronchitis, or emphysema, or asthma, whichsoever opens the scene, the final result is much the same.

35. Contrary to what might be expected, operations upon small gangrenous cavities of the lung are sometimes attended by good results.

V.—OF STINKING EXPECTORATION

36. The causes of stinking expectoration are five—(i) empyema; (ii) gangrene of the lung; (iii) phthisis; (iv) diseased bronchial tubes; (v) abscess of the bronchial glands, opening into the air-tubes.

(i) The physical signs in a case of expectoration of an empyema are often very slight, because (*a*) the cavity is small and deep-seated, or (*b*) the cavity contains air.

(ii) Usually only a small piece of lung is affected. It is not necessarily fatal. One may often get good specimens of lung tissue from the sputa in these cases.

(iii) In those cases where the cavity contains a small slough, or where the wall of the cavity itself

sloughs, both the cavity and the slough may be very small.

(iv) Here we have two varieties:—(*a*) Where the tubes are dilated, and the secretions putrefy in them: a condition which may be present in cirrhosis of the lung. (*b*) Where the secretions of bronchitis putrefy in undilated tubes.

(v) A rare condition, and difficult of diagnosis.

VI.—OF PLEURISY AND EMPYEMA

37. It is safe to say that pleurisy is always due to infection by microbes. Nevertheless, it would be wrong to deny the influence of injury, exposure, or local cold as determining causes of an attack.

38. Tubercle is the commonest cause of a clear serous effusion. Cases occur where, on drawing off the fluid, advanced phthisis is discovered, with the existence of cavities in the lung, the detection of which was quite impossible before the tapping. Moreover, many cases of serous pleural effusion end fatally within ten years from tuberculosis. Again, tuberculous peritonitis is so often recovered from, that probably tuberculous pleuritis is also recovered from,

cases never proved to be tuberculous having really been so.

39. Vomiting is an almost invariable symptom at the onset of pleurisy in children. Haemoptysis is not uncommon in both children and adults.

40. Temperature is no guide to the nature of a pleural effusion, whether serous or purulent. Neither is the duration of the effusion. But rigor and a discharge from the ear, if associated, probably point to an effusion being purulent.

41. A large heart may so press upon the root of the left lung as to produce collapse of its lower lobe. Such a condition can be distinguished from pleural effusion only by the needle. The symptoms which attend an effusion occurring in such circumstances are more often than not left unrelieved by tapping.

42. Solid tumours of the chest and pleurisy with effusion give much the same physical signs; but the former do not displace viscera (e. g. the heart), whereas the latter does.

43. In the presence of a pleural effusion the co-existence of a pericardial effusion cannot be made out by physical examination of the chest. Post-

mortem, many unsuspected pericardial effusions are continually being discovered.

44. Blood-stained pleural effusion, though at one time supposed to be diagnostic of malignant disease of the lung, is not really so; for it occurs in some cases which rapidly recover, and, on the other hand, it is absent in some well-marked cases of cancer, the effusion being quite free from blood.

45. Serous pleural effusion so often clears up, that it is a good rule to wait a week or ten days before proceeding to paracentesis, unless the quantity of the effusion is large, such as nearly to fill the pleura.

46. Evacuate a very abundant pleural effusion as soon as you find it out, for it sometimes leads to sudden heart failure (lipothymia) and death within an hour or two.

47. Serous effusions do not tend to become purulent. In the great majority of instances purulent effusions are purulent from the beginning, and serous effusions remain serous throughout. In rare cases, an effusion which is purulent at first may be found to be serous at a later paracentesis.

48. Those cases of pleurisy where one suspects tubercle as the cause clear up quite as quickly as others, if not more so.

49. You never know what may be at the bottom of a pleural effusion, especially when chronic. Often the treatment adopted is based upon the assumption that the condition is one of simple pleurisy, whereas one of several complications may be present (e. g. an aneurysm of the aorta), which render evacuation of the fluid dangerous.

50. In passive pleural effusions, such as the hydrothorax of Bright's disease or heart disease, evacuation of the fluid does not give much relief. If the distress is great, however, it should be done for what little relief does follow. (See Aph. 41.)

51. The chronicity of a pleural effusion affects the prognosis in a similar way, because the tendency is great for the chest to refill almost as soon as it is emptied in cases of long-standing effusion.

52. Paracentesis of the chest has been known to cause fatal haemoptysis on the spot, as in a case where it was due to the rupture of a minute aneurysm situated in a small phthisical cavity of the lung.

53. There are three signs for desisting from the aspiration of a pleural effusion: cough, pain in the chest, and staining of the fluid by blood. The coughing which is induced during a paracentesis is probably due to oedema of the lung, set up by the returning blood-stream; this produces exudation, and, when the coughing is considerable, serous sputa containing much albumen are the result, involving a risk of death from suffocation.

54. I was wont to think that empyema confined to an apex of the lung did not occur, and that I could therefore exclude empyema as a cause of dullness in this region; but I have since seen a case.

55. The microbe in the empyema of children is usually the pneumococcus; in that of adults it is usually streptococcus. Hence, perhaps, the better prognosis in the former class of patients.

56. Empyema is seldom allowed to rupture spontaneously nowadays; but if this does occur, the commonest situation on the left side is at the point where the normal apex-beat of the heart is felt.

57. A small amount of most offensive-smelling pus may be drawn off by aspiration from the pleura, and

no further operation be required for the condition to clear up. If the amount present, however, is considerable, the chance of recovery without drainage is small. The foetor may be accounted for by the proximity of the oesophagus.

58. There is risk in puncturing a hydatid of the lung, even with a fine needle, and for the purpose of diagnosis only. Aspiration is full of risk.

VII.—OF PNEUMONIA

59. Pneumonia is not a local, but a universal disease; and the brunt of it may fall upon any part—lungs, endocardium, membranes of the brain, intestines, kidneys.

60. Acute pneumonia in children often runs a short course, the crisis appearing sometimes on the fourth or fifth day, or even earlier.

61. Pneumonia may be a cause of otorrhoea; in such cases the pneumococcus is abundantly found in the pus from the ear.

62. The way in which pneumonia clears up depends much upon the state of health the patient was in when attacked. In men who drink hard, the period

of resolution may be long. If evidence of consolidation of the lung be found after six weeks, the character of the consolidation is the same as it would be at the end of one week—i.e. hepatisation. At the end of several months, however, it would be of the nature of fibrous induration.

63. The mortality from pneumonia in patients who drink hard is high, and one reason is to be found in the fact that alcoholism predisposes to delirium.

64. So many and so great are the uncertainties in the course of a case of pneumonia that a prudent man will not attempt to predict the end, as to recovery or death. Many patients, who for days show no unfavourable symptoms, die: some patients, who look as if they could not survive, recover.

65. Pneumonia is sometimes a cause of sudden and unexpected death in people going about their business, as if there were nothing the matter with them.

VIII.—OF DISEASES OF THE HEART AND PERICARDIUM

66. In hospital practice, disease of the valves of the heart: in private practice, disease of its nerves and muscular tissues. In the end, both forms of disease

approximate each other: valvular disease leads to affections of the muscular walls, nervo-muscular disease leads to dilatation of the cavities and valvular orifices. In the senile heart, both conditions are often associated from the first, although the valvular degeneration may afford no physical signs even throughout the whole course of the disease.

67. Affections of the muscular tissue of the heart are usually more serious than those of its fibrous tissue (e.g. the valves), but afford much less definite physical signs, and therefore are less easily discovered. A beginner can hear murmurs and detect valvular diseases; but it requires long experience to appreciate nervous and muscular affections of the heart.

68. If more than one valvular lesion be present in a heart, it often happens that not more than one is diagnosed. One of the commonest combinations is that of mitral stenosis with aortic insufficiency, and then the development of the typical aortic diastolic murmur may be considerably interfered with.

69. Those valvular diseases of the heart which yield the most peculiar and characteristic symptoms

are, aortic regurgitation, mitral constriction, and tricuspid regurgitation. The other forms of valvular disease are less significant or less common.

70. Dilatation of the left ventricle may occur in a heart having mitral obstruction. This seems contrary to theory, but cardiac dilatation cannot be wholly explained by a consideration of pressure-effects. The amount of dilatation in the case above-mentioned is sometimes astonishing.

71. There is no kind of valvular disease of the heart which may not produce a thrill.

72. Mitral disease causes lividity by interfering with the circulation of the blood, bronchitis by interfering with its aeration, and emphysema in both ways.

73. Jerking pulse, capillary pulsation, visible pulsation and twisting of the arteries, though all useful signs of aortic regurgitation, are none of them pathognomonic. Each may occur without the presence of any valvular lesion, and in old people they are often due to arterial degeneration. Jerking pulse is common in atheroma of the aortic arch.

74. Venous pulse in the superficial veins of the arms or hands, however, must be regarded as a more

conclusive sign of aortic regurgitation, for it only occurs in the course of that disease, and perhaps in a few cases of extreme debility.

75. A rarer sign but one which is pathognomonic of aortic regurgitation, is conduction of the diastolic murmur into the large arteries, such as the femorals, over which vessels it is heard on auscultation, without using pressure by the stethoscope. In these cases the murmur is shrill.

76. Ulcerative endocarditis may produce quotidian fever some weeks before the appearance of physical signs on auscultation of the heart.

77. Very great dilatation of the heart is commoner in children than in adults, and may be produced more rapidly; in a few weeks even.

78. Signs afforded by the jugular veins are as useful indications in disease of the right heart as are signs afforded by the arteries in diseases of the left.

79. In the discovery of adherent pericardium we seldom get farther than a guess.

80. Pericardial effusion, even when not abundant, is sometimes a cause of sudden unexpected death.

81. Pericarditis is not so common now as formerly;

a fact which must be attributed to the use of sodium salicylate in the treatment of rheumatic fever. Endocarditis, however, seems as common as ever: for it occurs before the patients come under treatment.

82. In cases of erythema you should always examine the heart, for pericarditis is sometimes found without any other rheumatic symptoms.

83. Pericarditis is common in Bright's disease, but is not often detected ante-mortem.

84. In pericarditis the friction sound may remain, in spite of a considerable liquid effusion.

85. Dropsy, lividity, scanty urine, and weak irregular pulse—these are the four symptoms which, taken together, indicate the use of digitalis, without regard to the nature of the heart-lesion producing them. On the other hand, the use of digitalis is not indicated by finding on examination that the heart is dilated, the above symptoms being absent.

86. Orthopnoea is usually a sign of heart disease; even if the lungs be affected in the first place.

87. Leaning forward in bed: a sign of disease of the pericardium, aorta, or mediastinum, or of a very large heart.

88. In cases of heart disease we should investigate first the symptoms afforded by the attitude of the patient in bed, by the colour of the lips and cheeks, by the pulse, by the jugular veins, or by dropsy, before proceeding to physical examination. For this reason books written before the discovery of auscultation (such as the treatise of Corvisart) are worth reading, if only to show how much the physicians of that day could find out apart from the help of physical signs. Symptoms and not physical signs guide our prognosis and treatment.

IX.—OF DISEASES OF THE BLOOD AND BLOOD-VESSELS

89. It does not seem proven that what is called 'pernicious anaemia' is a definite disease. Cases so diagnosed often turn out on post-mortem examination to be cancer undiscoverable during life.

90. True leucaemia is rare in children. I have seen two cases, and hardly expect to see another. The term 'leucaemia' is ill defined; its use should be restricted to those cases in which the number of white blood-cells almost equals the number of red

and used in this way it may be said that cases of leucaemia never recover, though they may rally for a time.

91. In contradistinction from true leucaemia is that disease of young children in whom the spleen is enlarged—sometimes reaching the right iliac fossa —and in whom there are anaemia, bleeding from the gums, and a liability to bruising. Here, however, the prognosis is not necessarily bad, for the cases often recover. (See page 162.)

92. You should never see anaemia in a young woman without thinking of phthisis as a possible cause.

93. It is often a question, when called to treat a young woman suffering from dyspepsia and anaemia, whether the dyspepsia be due to the anaemia, or vice versa. To cure the indigestion will sometimes cure the anaemia: to cure chlorosis will cure attendent gastralgia.

94. There are cases of permanent anaemia in which the blood-forming faculty, wherever that resides, is feeble, and we cannot stimulate it. A single haemorrhage may result in anaemia which lasts throughout

the rest of life, as in the case of Paulina, the wife of Seneca, recorded by Tacitus.

95. Iron is not of much use in the anaemia of nephritis, or indeed in any form of anaemia but chlorosis, for which it is specific.

96. It is not uncommon for a patient to live after rupture externally of a thoracic aneurysm. Fainting after the first gush of blood tends to stay the flow, and the deposit of laminated fibrin protects from severe loss of blood afterwards. The presence of this fibrinous layer and its thickness or thinness are important points in determining the length of life in these cases. More common than actual rupture, however, is a process of gradual ulceration and leakage or oozing from the vessel.

97. Very copious epistaxis may be followed by dementia lasting for many months.

X.—OF NEPHRITIS, ALBUMINURIA, AND DROPSY

98. You will seldom be wrong if you consider all cases of nephritis not associated with some obvious specific disease, such as scarlet fever, diphtheria, pneumonia, &c., to be chronic.

99. Quite apart from either diphtheria or scarlet fever, patients suffering from attacks of sore throat are liable to nephritis, which is of temporary duration, lasting as long as the quinsy. The urine is usually bloody in such cases.

100. It is not easy to distinguish with certainty between the varieties of nephritis during life; much albumen and little urine may be found in a case of chronic interstitial nephritis.

101. Nothing cuts off the flow of urine so much as persistent vomiting. This failure of urinary secretion may be so marked, that unless the cause be remembered, you may suspect suppression of urine.

102. Having excluded calculus and uric acid gravel, haematuria in people who are past middle life is most commonly due to granular kidneys.

103. Haematuria repeated at long intervals may be the only evidence of the existence of granular kidneys. (See page 3.)

104. Granular kidney may exist to a high degree without constant albuminuria. Moreover, in some cases no signs of cardiac hypertrophy can be made out. These cases usually terminate either by the

development of the ordinary symptoms of Bright's disease, or by uraemia, or by the occurrence of cerebral haemorrhage.

105. Black hellebore and cantharides are the two most efficient drugs for arresting haematuria due to granular kidney. The latter drug, however, is a dangerous remedy, sometimes producing suppuration in the kidney, if carelessly used.

106. It is a mistake to suppose that early morning urine is best for testing for albumen; often it contains none, when that passed later in day contains a good deal. The same statement is true of saccharine urine.

107. With valvular disease of the heart you can never tell at first the significance of albuminuria; it may be transient and due to mere congestion of the kidneys. But if casts are found in the urine as well as albumen, this is an observation of more value, for it indicates the existence of disease of the kidneys.

108. An epileptic attack, like an apoplectic fit, may cause temporary albuminuria.

109. Travelling, and especially railway-travelling, produces temporary albuminuria in some people.

110. Bad cases of chronic nephritis sometimes preserve a ruddy complexion to the very end.

111. Sudden anasarca sometimes occurs in persons who have been the subjects of albuminuria without dropsy for a long time before.

112. Do not reduce the allowance of fluid food in dropsy; it is bad practice, for anything is bad practice which reduces the amount of urine. For this reason, one of the best remedies for nephritis with scanty urine or with a tendency to uraemia, is whey.

113. Purgatives in dropsy are not of much use; the practice is a survival. If we cannot act upon the kidneys, we should do nothing to add to the patient's discomfort.

XI.—OF GASTRIC ULCER AND CARDIALGIA

114. In chronic ulceration of the stomach, when the patient is young, it is generally a succession of ulcers you have to deal with; when the patient is old, it is generally one ulcer, which will not heal: a Chironian ulcer.

115. In young women a gastric ulcer which has been diagnosed seldom perforates. Perforation when

it takes place, is often the first definite symptom. Under treatment the risk of perforation is small.

116. Chronic gastric and duodenal ulcers are seldom to be distinguished clinically.[1] Duodenal ulcers only occur in the 'gastric' part of the duodenum, i.e. above the opening of the bile and pancreatic ducts, where the contents of the gut are still acid.

117. In chronic gastritis and gastric ulcer the pain is commensurate with the acidity of the stomach contents. It is owing to this fact that relief follows the act of vomiting. It is owing to the same fact that the pain usually comes on half an hour or so after food is taken.

118. The 'Carlsbad treatment' in cases of chronic gastritis is useful, though it has become of less importance since the introduction of the stomach-tube. It consists in the free use of alkalies and aperients. Carbonate of magnesium is a particularly useful drug, for it is a powerful antacid, and the soluble salts of magnesium are aperient, ensuring emptying of the stomach. No fermentible foods should be given in

[1] Since this opinion was expressed the diagnosis of duodenal ulcer has been improved. By consideration of the characters of the pain, its situation and its relation to taking food, we are often able to arrive at a correct opinion.

these cases; but milk is an exception to this rule, for though it is fermentible, experience shows it to be devoid of ill effects.

119. Washing out the stomach in cases of ulcer is not free from risk: I have known it cause fatal haematemesis.

120. Sub-diaphragmatic abscess occurring as a metastatic abscess (i.e. the result of pyaemia) must be very rare. Hence pyaemia (with a sub-diaphragmatic abscess) is to be regarded as secondary to the abscess.

121. Cardialgia has been divided into two kinds, as it occurs in a full or in an empty stomach. The former depends upon excessive acidity (acrimony) of the contents of the stomach: the latter is neuralgia. The former kind requires careful feeding, so as to exclude articles of food prone to undergo acid fermentation: in the latter kind no special dieting is necessary. In the acid form alkalies (especially magnesia) are of great use: in the neuralgic form arsenic, cannabis indica and nitro-glycerine.

122. Change of air and scene sometimes brings immediate relief in nervous cardialgia, when diet and drugs have failed.

123. Neuralgia and atonic dyspepsia (which is part of general weakness) are the only two common affections of the stomach in a young *man* who is temperate in food and drink.

XII.—OF DIARRHOEA AND CONSTIPATION

124. In infantile cholera the temperature of the surface of the body may be as low as 97°, when that of the rectum is as high as 102°.

125. Many of those who are continually complaining of constipation, are suffering more from fear and hypochondria than from anything else. It is no law of nature that the bowels should be relieved punctually once in twenty-four hours. Some persons feel in better health when the bowels act only once in two or three days: free evacuations are followed by a sense of weakness. Patience and contentment with nature's operations are not the worst remedies for constipation.

XIII.—OF ABDOMINAL TUMOURS

126. In physical examination by palpation, organs and tumours feel more superficial than they really are.

127. A renal tumour on the left side very often pushes the colon in front of it; but this condition is not found on the right side.

128. On palpation of the abdomen, in thin patients, the normal urachus can often be felt as a cord, stretching up from the bladder to the navel. In cases of malignant disease of the abdomen, the urachus often becomes infiltrated by the growth, and this band may then be felt thickened, and measuring as much as half an inch across.

129. In cases of malignant disease within the abdomen, it is not uncommon to find post-mortem a chain of enlarged lymphatic glands, stretching up the thorax on one or both sides, and appearing behind the clavicles. We may even be led to a correct diagnosis of malignant disease of the abdominal viscera by finding these glands. Thus, deep jaundice, obscure abdominal pain, but nothing abnormal felt in the abdomen itself, with hard glands behind the clavicle, would point to malignant disease of the head of the pancreas. Be this as it may, the discovery of these hard and enlarged glands is always most important.

130. The commonest seat of large faecal tumours is the caecum. Smaller tumours are common in the sigmoid flexure. Elsewhere faecal tumours are uncommon.

XIV.—OF DISEASES OF THE LIVER

131. Enlarged spleen may be the only evidence of cirrhosis of the liver.

132. Haematemesis in cirrhosis of the liver may be severe enough to cause very marked and prolonged anaemia, and may even be fatal.

133. There is a condition known as 'tympanitic ascites', where the abdomen contains liquid but is everywhere resonant to percussion. Intestines will give resonance through a layer of liquid an inch thick.

134. Malignant disease of the liver may occur, and the patient gain weight for a time, under the benignant influence of hope: 'the only cheap and universal cure.' Indeed, a patient's gaining weight whilst under treatment does not exclude malignant disease of any organ.

XV.—OF JAUNDICE

135. Fatal (or malignant) jaundice (icterus gravis) is indistinguishable at first from ordinary simple jaundice. Let your prognosis be guarded in every case of recent jaundice until you have some little experience of the course that the disease is taking.

136. In jaundice the urine contains bilirubin before the skin or conjunctivae become tinged by it. Moreover, urinary jaundice may be of very brief duration, and jaundice of the tissues never appear at all. Iodine is a better test for the presence of bilirubin in the urine than is nitric acid.

137. A jaundiced skin may never wholly recover its natural colour in chronic cases, even when the cause of the jaundice is removed.

138. It is sometimes a good thing to let patients suffering from chronic jaundice due to a gall-stone take exercise. In this way the stone may be dislodged, a bad attack of colic ensue, and a spontaneous cure be effected.

139. In women past middle age, gall-stones are so common, that one is not wrong to be always suspecting them.

140. A distended gall-bladder is more often dependent upon cancer than upon stones.

141. Recurrent jaundice is probably due to gall-stones.

XVI.—OF CEREBRAL HAEMORRHAGE AND HEMIPLEGIA

142. Contrary to current opinions of apoplexy, cases in which the patient is, as it were, struck down by a pole-axe—'stunned,' as the word really means—are not common; and when they occur, they are usually due to haemorrhage into the pons, though the haemorrhage may be quite small. The coma of fatal cerebral haemorrhage is usually 'ingravescent'. (See p. 15.)

143. In cases of hemiplexy (sudden hemiplegia) with coma, rigidity generally indicates haemorrhage into the ventricles, convulsions generally indicate haemorrhage into the pia mater.

144. Right hemiplexy, accompanied by aphasia, may be safely said to be due to softening from arterial obstruction, and not to haemorrhage.

145. Conversely embolism is not likely to be

the cause of right hemiplegia if there is no associated aphasia.

146. In any case of hemiplexy, loss of consciousness, especially if complete, is in favour of haemorrhage as its cause, rather than softening.

147. A hemiplegia, therefore, which comes on suddenly (hemiplexy) and is unaccompanied by loss of consciousness, is probably due to softening from arterial obstruction. Hysterical hemiplegia also sometimes comes on suddenly, but is much less common. It is generally believed that the face is never paralysed in the latter case, though this is incorrect.

148. Hysterical hemiplegia does not come on during an emotion. Unless there be some positive evidence for hemiplegia being hysterical, it should not be confidently diagnosed as such. Hemiplegia appearing during an emotion is more likely to be due to a small haemorrhage.

149. Uraemic hemiplegia is well known, but rare. Still, the possibility should always be borne in mind when there are evidences of granular kidney in a hemiplegic patient.

150. When hemiplegia has come on suddenly, its

continuance for more than three or four days excludes both epilepsy and uraemia as possible causes. One has then to discuss actual lesions: (i) haemorrhage, and (ii) softening from arterial obstruction, as likely causes. In favour of (i) is any evidence of granular kidneys and a hypertrophied left ventricle; conditions so often associated with cerebral haemorrhage. In favour of (ii) is the coexistence of aphasia with the hemiplegia.

151. A haemorrhage into the internal capsule produces rigidity sooner or later. It may appear as early as the fourth day or as late as the sixth week. Sometimes both legs become rigid even in hemiplegia; a fact explained by the incomplete decussation of the pyramidal fibres.

152. In cases of hemiplegia it is difficult to say if there is, or is not, any paralysis of the face when the patient is lying upon the side. The examination should therefore be made with the patient lying upon his back or sitting up.

153. Congenital hemiplegia or 'birth-palsy' excepted, the cerebral hemiplegia of children differs in no respect from that of adults.

154. The pain in the limbs which sometimes follows hemiplegia is often of the nature of arthritis, the shoulder-joint being most commonly affected. At other times tender points appear along the course of the nerve-trunks.

155. The after-condition of old hemiplegics is often very sad, when they suffer from aphasia and verbal deafness also. They are little different, to all outward appearance, from idiots; but what the state of their mental powers may be we can no more tell, than we can tell what passes through the mind of a dog.

156. The only form of spinal hemiplegia you are likely to meet with is that due to anterior poliomyelitis.

XVII.—OF MENINGITIS

157. We rarely see a case of meningitis without being told of a blow upon the head some time before; but the blow seldom or never has had anything to do with the disease.

158. No disease is more frequently followed by tubercular meningitis than is hooping-cough.

159. A direct diagnosis of tubercular meningitis is

rarely possible, for the only direct evidence is the discovery of tubercles in the choroid—too often only possible when the patient is moribund. But generally a diagnosis may be based upon the fact that the disease is—as shown by the symptoms—cerebral, is in a child, and had a sudden onset.

160. Aphasia is occasionally the first symptom in tubercular meningitis, and may be the only one present for some days.

161. By far the commonest manifestation of general acute tuberculosis in children is tubercular meningitis.

162. Uraemia in children may closely simulate tubercular meningitis, but albuminuria does not occur in the latter disease.

163. Recovery from non-tubercular meningitis sometimes occurs but is never to be desired. For the recovery is apt to be incomplete, and the patient is left paralysed, blind, deaf, or an idiot.

XVIII.—OF EPILEPSY

164. Epilepsy does not admit of definition, because we do not know what the essence of epilepsy is; nor

has it any criterion; certainly loss of consciousness is no criterion.

165. Fracture of the base of the skull may be produced by a violent fall during an epileptic attack; and the special signs of fracture may be absent. The coma of the epileptic seizure becomes prolonged into the coma due to haemorrhage caused by the fracture.

166. Epileptic attacks are common in the course of any chronic disease of the brain or its membranes—sclerosis, general paralysis, chronic meningitis, old hemiplegia, &c.

XIX.—OF HYSTERIA

167. Hysteria is a distinct malady. It is a mistake to employ the term to cover all the cases of obscure nervous derangement in women which we do not understand.

168. Hysteria is generally diagnosed by the method of exclusion, and mistakes are sometimes made in consequence. Yet very often no other method of diagnosis is possible. The most characteristic symptoms are defects in sensation (especially anaesthesia), and attacks of suffocation (passio hysterica).

169. Pain, muscular atrophy, loss of faradic excitability by the muscles, and loss of knee-jerk—either of these tells against hysteria being the cause of a paralysis.

170. Anaesthesia, and especially hemi-anaesthesia, is more often due to hysteria than to any other disease.

XX.—OF MYELITIS

171. In medicine you can seldom say that anything is always the case; but one of the instances most nearly justifying such an affirmation is the production of bladder symptoms in myelitis.

172. You will not be far wrong if you say that only one disease of the spinal cord begins by affecting the bladder, and that is myelitis.

173. The two most useful drugs in the treatment of myelitis are belladonna and strychnine; and there seems a good deal of reason for adhering to the rule in vogue since Brown-Séquard's time: to give the former in acute, and the latter in chronic cases.

XXI.—OF NEURITIS

174. Sciatica is most commonly a neuritis, and traumatic, i.e. due to much driving on a hard seat.

In this connexion note the frequent occurrence of some degree of wasting of the muscles, loss of sensation, &c., after the attack.

175. Loss of knee-jerks may be the sole sign of post-diphtheritic neuritis. In one case the reflex was lost by a patient in whom it was known to have been previously well marked; there had been abundant discharge of membrane from the trachea, the fauces and larynx being unaffected; and there was no paralysis.

176. The patellar reflex is the last function to be regained in recovery from neuritis.

177. In cases of paralysis, pain must, as a rule, be regarded as contra-indicating the use of massage.

178. In cases of muscular wasting of parts, where the muscles are nicely antagonized, as they are at the ankle-joint, galvanism must be used with great caution, if at all. For by it you may do more harm than good, improving the nutrition of the antagonistic (unaffected) muscles out of proportion to any improvement resulting to those that are wasted. In this way deformity may be produced, or increased. So far as I know, massage does not entail a similar risk.

XXII.—OF SOME OTHER NERVOUS DISEASES

179. Double internal strabismus is often the earliest sign of tumour of the pons, because the sixth cranial nerves are so easily compressed. Disease of the pons is not uncommon in children, and is either tubercular or a diffuse glioma.

180. It is erroneous to regard pin-point pupils and a high temperature as diagnostic of a lesion of the pons; any cerebral lesion may cause the latter symptom and the former is present in the case of haemorrhage into the ventricles.

181. Cervical opisthotonus of children[1] is not a tuberculous affection; it is due to chronic meningitis around the medulla oblongata. It may, however, occur as a temporary symptom in tubercular meningitis.

182. There seems no reason for thinking that any other difference than one of degree exists between paralysis agitans and so-called senile tremor.

183. It is improbable that haemorrhage into the spinal cord ever takes place apart from softening.

[1] See St. Bartholomew's Hospital Reports, vol. xiv. p. 23.

The fact that myelitis often sets in suddenly leads to the mistaken supposition of haemorrhage.

XXIII.—OF DELIRIUM

184. Delirium, apart from insanity (which may be regarded as a chronic or oft-repeated delirium), is mostly due to alterations in the blood, i. e. to blood-poisoning. This is an old notion; thus Shakespeare, speaking of a delirious man, has—'All his blood is touched corruptibly.'

185. No conditions are more difficult of diagnosis than those which are chiefly characterized by delirium or coma.

186. If called to a case of delirium with fever (phrenitis) it is useful to consider three conditions of which it may be a symptom :—

(i) Brain disease—such as purulent meningitis; these cases the old physicians called 'idiopathic phrenitis'.

(ii) Blood-poisoning — including poisoning from drugs (alcohol, belladonna, &c.); from specific diseases (enteric fever, pneumonia, hydrophobia, &c.); and from local diseases (pericarditis, &c.).

(iii) Insanity—remembering that insanity is really a chronic delirium; that you may be dealing with the first attack; and that fever is not an uncommon accompaniment of an acute attack of insanity, or mania.

187. Delirium does not occur until the intellectual faculties are more developed than they are in very young children.

XXIV.—OF HEADACHE

188. Some people seem to be incapable of headache, even when they suffer from disease which is usually accompanied by this symptom, i. e. typhoid fever.

189. Indian hemp is a drug of great value in the treatment of chronic dull headache. Especially is it of value in overworked men and in Bright's disease. Its use should be cautiously commenced, especially in women. Persons accustomed to take much alcohol are usually very tolerant of the drug.

190. Iodide of potassium is very useful in headaches of a different character—acute and violent headaches, often accompanied by a raised temperature, the cause of which is obscure. Such cases are

not very uncommon—headache and fever are the two cardinal symptoms. Full doses of the drug should be given, and are often followed by speedy cure, though at first the pain may be aggravated by the iodide. In these cases, though a tempting hypothesis, syphilis can often be wholly excluded.

XXV.—OF APHASIA

191. Aphasia is not a defect in the unuttered word, nor in the uttered word ; it is a form of paralysis—of the special movements of speech (see p. 27).

192. In many cases of aphasia attempts to protrude the tongue only succeed in getting it as far as the teeth; this illustrates the paralytic nature of this condition.

193. The cases of aphasia suddenly appearing during an emotion are not hysterical. The disorder may occur in adult men, and is better described under the term 'emotional aphasia'. The condition may last for several days (see p. 31).

194. There is no aphasia in disease of the pons.

XXVI.—OF DISORDERS OF SLEEP

195. An apparition is sometimes nothing but a dream seen with open eyes by a person who is half asleep and half awake. When the awakening becomes complete, the apparition vanishes. The prophet Balaam 'saw the vision, falling into a trance, but having his eyes open'.

196. People are born good sleepers or bad. A tendency to sleep badly runs in families, and is sometimes observed in the youngest infants. To make one who is naturally a bad sleeper into a good sleeper is an impossible task: all that can be done is to remove or remedy any accidental and temporary conditions which hinder sleep. The risk run by bad sleepers arises not so much from mere want of sleep as from the temptation to fly to narcotic drugs: hypnotic is nothing but a euphemism for narcotic: the mischief lies in remedies much worse than the disease.

197. Bad sleeping is largely aggravated by the fretfulness which it causes in those who suffer from it; for they are often of a peevish disposition, given to

worry, and they will not or cannot let nature take her course. Anxious desire for sleep hinders sleeping according to the universal law that voluntary participation in an involuntary act inhibits accomplishment thereof.

XXVII.—OF SOME INFECTIOUS DISEASES

198. The hoop is not an absolute criterion of hooping-cough. A child may hoop for weeks with a cough which is not hooping-cough, and yet cannot be distinguished from it, except by the fact that the said child does not convey the disease to other children who are susceptible.

199. In measles, although the fourth day is the commonest for the appearance of the rash, the eruption may be the first sign of the disease, or, again, may be delayed until the seventh or eighth day, the patient meanwhile being very ill. Indeed, there is no disease in which the duration of the invasion period is so variable.

200. Mumps may produce many curious nervous symptoms at times, e.g. intense giddiness.

XXVIII.—OF ENTERIC FEVER

201. The febrile onset of secondary syphilis may be mistaken for typhoid fever: and an incipient syphilide may be indistinguishable for a few days from typhoid spots.

202. Enteric fever seldom begins with a rigor; pneumonia often. The reason probably lies in the fact that in the former disease the temperature rises slowly, in the latter it rises rapidly.

203. Scarlatiniform symptoms—a rash, sore throat, &c.—coming on early in enteric fever, are not uncommon. In such cases diagnosis at first is often impossible.

204. Vomiting early in enteric fever, especially if frequent, indicates a severe case; it is accompanied by bad headache.

205. Muscular rigidity in enteric fever always marks a severe, and often a fatal case.

206. Deafness is common in enteric fever. Stoll thought it indicated approaching convalescence, the other symptoms being favourable: but a statement so barely empirical ought to be well established before much importance is attached to it.

207. Otitis interna is not uncommon in the course of typhoid fever; both ears are usually affected. By means of this otitis, typhoid fever may be complicated with meningitis, at least if optic neuritis followed by atrophy can be accepted as evidence of meningitis.

208. That form of typhoid fever which is marked by incessant raving delirium is hard to be distinguished from meningitis or from phrenitis due to some other morbid poison. This is especially the case when the typhoid delirium sets in unusually early, during the first week of the disease, and before the eruption appears. Moreover, in some of these cases the eruption never appears. And suppose that this raving and roaring delirium (febris ululans) be attended by constipation, a retracted belly, temporary rigidity of the neck, and watery discharge from the ear; suppose that spots be absent throughout the whole course of the disease, and that examination of the eyes be difficult through the restlessness of the patient, and the eyelids being kept tightly closed. Yet all this happened to a patient of mine who died in the fourth week of illness, and whose intestines showed typhoid lesions of that period, the brain being healthy. Test-

ing the blood by cultivations of typhoid bacilli (Widal's test) must be employed as an additional means of diagnosis, but a negative result may be expected early in the disease.

209. Haemorrhage from the bowels in enteric fever, if it occur not later than the second week, may be disregarded. After that time it is a serious symptom. The opinion of Graves and Trousseau that haemorrhage in enteric fever is not of much importance, is probably explained by assuming, with Collingridge, that they were referring to the class of early haemorrhages. Late and copious haemorrhage is a frequent precursor of perforation.

210. Nothing can be done to relieve the tympanites of enteric fever. Passing a rectal tube, puncturing the intestines with a trocar, administering small doses of turpentine or charcoal—all these have objections or produce no benefit. In patients fed on whey alone there is but little tympanites.

XXIX.—OF SOME TUBERCULAR DISEASES

211. A period of improvement in general condition, even an increase in weight, does not exclude the

possibility of a child's disease being tuberculous in nature, and fatal.

212. The existence of tubercles beneath the skin—a 'phlegmonous scrofulide', but not lupus—is a very serious condition; the patients die. The tubercles are apt to soften, disappear, and signs of general tuberculosis follow speedily.

213. Tubercular peritonitis may come on quite suddenly; but when it does so, the acute symptoms last for a short time only, and the disease then lapses into the usual chronic state. During the acute stage, however, the diagnosis from some form of intestinal obstruction may be difficult (see p. 168).

214. In chronic tubercular peritonitis indurations within the abdomen become manifest sooner or later in most cases.

215. Tubercle of the brain substance occurs as circumscribed tumours. There is, however, a very rare condition of miliary tubercular encephalitis, where the tubercles follow the ramifications of the blood-vessels, but this is only found in conjunction with tubercular meningitis.[1]

[1] See *Reynolds' System of Medicine*, 1st ed., vol. ii. p. 395.

XXX.—OF CHOREA AND RHEUMATISM

216. Choreic patients are nearly always weak-minded, so long, at least, as the chorea lasts. Insanity is an occasional accompaniment of the chorea of girls.[1]

217. I have never seen a fatal case of chorea in which endocarditis was not found on post-mortem examination.

218. Salicylate of soda, guaiacum, and aconite—the three drugs having a reputation for curing sore throat—have all more or less specific action in rheumatism. Hence, if with a sore throat there is no other indication, you are justified in treating it as rheumatic.

219. The use of sodium salicylate was formerly often attended by attacks of vomiting, salivation, and delirium, which are now seldom seen. These effects were probably due to impurities in the drug, such as carbolic acid.

220. Salicin is a feeble remedy in cases of acute rheumatism; you may give a patient twenty-grain

[1] See St. Bartholomew's Hospital Reports, vol. xxii. p. 89.

doses every two or three hours without any effect, and then obtain almost immediate good from the use of sodium salicylate. As a fillip, used like quinine, and in mild cases, salicin is useful.

221. In rheumatic fever, delirium occurs under several distinct conditions:—

I. Temporary slight delirium is not uncommon, even in persons who have not drunk hard; and especially at night-time. It may be that large doses of salicylic acid have something to do with it.

II. But delirium is sometimes the main symptom of the disease—delirium which is raving and apt to end in coma. The temperature in these cases may be high, but is not necessarily so: that is to say, the delirium cannot be attributed to the raised temperature. (1) This delirium is sometimes of the same kind as that which occurs in typhoid fever, i.e. not connected with any local disease; indeed, the arthritic symptoms are sometimes very slight. Cerebral rheumatism this form of delirium has been called. Drunkards are prone to it. (2) Delirium is sometimes associated with, and dependent upon, local

inflammation, namely, pericarditis, pneumonia, or meningitis.

III. Delirium occurring after the cessation of rheumatic fever; a chronic lunacy, lasting for months, and of the same kind as sometimes follows typhoid and malarial fevers.

222. Rheumatoid arthritis, having an acute onset, cannot at first be diagnosed from rheumatic fever.

XXXI.—OF SYPHILIS

223. I have never been able to satisfy myself that there is any such thing as syphilitic disease of the lung. Syphilitic disease of the mediastinum undoubtedly occurs, but is very uncommon; it is certainly much rarer than aneurysm in this situation, which it may closely resemble in its symptoms.

224. There is too great a tendency to call all babies that are wasted and have sores on the body, syphilitic. These sores are often due to neglect, dirt, want of food.

225. Syphilis is almost the only cause of sudden blepharoptosis; it is also the great cause of paralysis of the iris: indeed of all forms of ophthalmoplegia.

226. Haemorrhage into the substance of the brain may occur as a sequel to gumma of this organ, especially when the patient is an infant.

XXXII.—OF SOME SKIN DISEASES

227. Rheumatoid symptoms are very apt to occur in conjunction with three skin diseases, in this order of frequency: Erythema (especially E. papulatum), purpura, and urticaria; and these eruptions sometimes interchange.

228. A person suffering from active psoriasis is likely to get it upon any irritated piece of skin, e. g. a scratch.

229. Ordinary facial psoriasis may simulate a syphilide if washed much with soap and water, the spots being no longer scaly, but becoming shiny, and of the colour that is common in syphilides.

XXXIII.—OF DIABETES AND GLYCOSURIA

230. Diabetes is a disease often overlooked, sometimes because the urine is not tested for sugar on account of its having a fairly low specific gravity (say 1015°); which really is compatible with the

presence of a considerable amount of sugar: sometimes because the patient is a child: and sometimes because there is no thirst or emaciation.

231. Diabetes sometimes becomes evident in two or three members of a family at the same time, so as to give an appearance of contagiousness. This notion is by no means new, but there is no proof that it is true.

232. Temporary and recurrent glycosuria, if not due to the ingestion of large quantities of carbohydrates, indicates a tendency to diabetes.

233. The great quantities of food which diabetics sometimes consume, to satisfy the excessive appetite which often occurs as a symptom of the disease, never seem to cause dyspepsia.

234. Diarrhoea is not uncommon in diabetes; it may even be dysenteric.

235. Diabetes resembles motor ataxia in three points—loss of knee-jerk, perforating ulcer of the foot, and darting pains in the limbs.

236. Why is the diabetes of hospital patients so much more intractable than that of the well-to-do?

237. It is dangerous to put diabetics upon a very

strict diet suddenly; coma has come on when this has been done.

238. The beneficial effect of opium in the treatment of diabetes is probably due to the power the drug has of allaying the feeling of weariness and discomfort, and of acting as a euphoric.

XXXIV.—OF SOME SIGNS AND SYMPTOMS

239. Intermittent pulse in children after serious illness—or indeed after illness which was not serious—is so common as to be of little importance. The pulse of many old people intermits.

240. Difference in size of the pupils is often temporary, and is by itself no sign of disease.

241. *Tache cérébrale* is a sign of little or no value.

242. The most infallible early sign of death is that the muscles lose their faradic excitability.

243. During almost any acute illness the mind may become so clouded that afterwards the patient remembers scarcely anything that happened in the course of his disease.

244. In all nervous diseases sensory symptoms are apt to be fugitive.

245. Convulsions are often the sole symptom of any kind of brain disease in infants.

246. So little is known about the anatomy of anaesthesia, that, unless it be a hemi-anaesthesia, a facial anaesthesia, or associated with some form of paralysis, perhaps the less said about it for purposes of diagnosis the better.

247. All sorts of anaesthesia are met with in disease of the pons; difficult to explain because we know so little of the course of sensory fibres in this situation.

248. Examination of sputum for pus microscopically is of no use, for the naked eye appreciates the only important fact, that is to say, the amount of pus, whether great or small, and not its mere presence, which may always be presumed.

249. 'His cheek displays a second spring of roses taught by wine to bloom.' Beer also is a cause of this permanent dilatation of the capillary blood-vessels, associated sometimes with gutta rosea: but spirit-drinking, even for many years, often fails to produce any change in the face, except pallor.

250. The blue line of lead-poisoning may become apparent very early in the disease. When acetate of

lead was wont to be given freely for haemoptysis, a blue line sometimes developed in three weeks from the commencement of taking the drug.

251. There is no disease in which more or less permanent crippling may not result from the patient lying curled up in bed. In enteric fever and rheumatism it is not uncommon, and bad contractures are occasionally seen in cases of neuritis. These deformities should be studiously prevented, or, if this has not been done, they should be corrected early. There is a tendency for dislocation of the tibia backwards upon the femur to take place.

252. A muscle may be quite paralysed to faradism, and yet not be paralysed to volition. The opposite condition is, of course, much commoner, occurring as it does in all cases of upper-segment paralysis.

253. In acute diseases, more valuable prognostic signs are afforded by the breathing and aëration of the blood than by the pulse.

254. Delirium or frequent vomiting occurring suddenly in a chronic disease is often prognostic of death within a day or two.

255. When severe abdominal pain is dependent

upon caries of the vertebrae, aneurysm of the aorta, aortic regurgitation, pneumonia, or pleurisy, the real disease is sometimes overlooked.

XXXV.—OF FEVER

256. Sudden pyrexia, the temperature rapidly reaching a high degree, without any other signs of disease, seldom lasts.

257. Convulsions in children are often sufficient to cause high temperature—a rise of 9°–10° even—and this hyperpyrexia will prove fatal unless counteracted by cold bathing. In such a condition it is obvious that no treatment can be much worse than the customary hot bath.

258. Haemorrhage may be attended by a rise of temperature quite apart from the disease causing the loss of blood. This is well seen in some cases of haemoptysis. With Cullen, fever formed part of his definition of haemorrhage, 'Pyrexia cum profusione sanguinis absque vi externa.'

259. Frequently a convalescent patient, whose temperature will not settle down, acquires a steady normal temperature on being allowed to get up. In

patients convalescent from rheumatic fever this is especially noticed.

XXXVI.—OF FOOD IN DISEASE

260. Pre-digestion of food given by the mouth is of very little value in any disease.

261. You must not think that fever in itself contra-indicates the administration of solid food.

262. An apparently good condition of a patient fed only upon nutrient enemata is often deceptive, for dangerous symptoms of inanition may appear suddenly and without warning. A very little food in the stomach is much better than a large amount in the rectum, and on this account the former method of feeding should never be wholly abandoned without real necessity.

263. A strict milk diet is not to be recommended in cases of chronic nephritis. Some patients fare better upon a meat regimen, and few fare worse. Whey is always suitable.

264. In typhlitis avoid those kinds of food which leave much residue after digestion. For this reason whey is better than milk.

265. The best remedy for uric acid gravel is whey.

XXXVII.—OF CHILDHOOD AND OLD AGE

266. Boys are sometimes very backward in learning to talk; but if a boy cannot talk at four years of age, he is—with a single very rare exception—either deaf and dumb or an idiot. The former alternative can easily be excluded. The exception mentioned is the condition of congenital aphasia (see p. 32).

267. There is often a remarkable latency about the diseases of old people. Phthisis particularly is often overlooked because of its supposed improbability.

268. People who are said to die of 'old age' die nevertheless from failure of a particular organ, and not from universal senile decay. Still, it is sometimes difficult to say from what an old person is dying.

XXXVIII.—MISCELLANIES

269. Prolonging life at the end of hopeless diseases: say rather, prolonging the act of dying. 'Mors minus poenae quam mora mortis habet.'

270. Gout and diabetes, two most mysterious diseases, both so easily known in their glaring mani-

festations, and both so utterly unknown in their essential nature.

271. A letter containing four pages or more, closely written and narrating the writer's own disorders, is a sure and certain sign of hypochondria.

272. When we have prescribed that continual temperance in all things which is necessary to the cure of most disorders, how often do we find that our patient reckons the loss of pain to be purchased too dear by the loss of pleasure.

APPENDIX I

THE CONFLICT OF MEDICINE WITH THE SMALL-POX.[1]

On May 14, 1796, Dr. Edward Jenner inoculated his first patient for the cow-pox. I shall not repeat, at any length, the oft-told tale of Jenner's life and his discovery, but I shall take leave to widen the boundaries of my theme, and to occupy the time at my disposal this evening by a sketch of the history of the conflict of medicine with the small-pox.

It is commonly assumed that the poison has but one source, namely, contagion from man. Jenner was of a different opinion, as I shall show hereafter. But assuming that contagion from man is now the only source of the disease, we may, with reason, ask whether history can tell us when the morbid poison first appeared in the world. All that we know is that

[1] Read before the Abernethian Society in 1896, to celebrate the hundredth anniversary of Jenner's first vaccination.

about a thousand years ago a Persian named Razes wrote a book upon small-pox and measles, the most important work which the Arabian school of medicine has left us. Razes' book is written in Arabic: some have supposed that the disease first arose in Arabia, and one reason for the supposition is that so many contagious diseases have travelled westward, with the sun; as Bishop Berkeley said, 'Westward the course of empire takes its way.' Epidemic cholera certainly comes to us from the East; so does influenza, and the plague. Diphtheria used to be called the Egyptian disease; possibly its original habitat was the valley of the Nile, as the valley of the Ganges seems to breed cholera, and as influenza was thought to have been caused by inundations of the Yellow River in China. Only one disease that I know of has been supposed to come to us from the West; but this cannot be proved; and that true American disease, the yellow fever, has never been able to settle on this side of the Atlantic. Concerning the fountain-head of the small-pox poison we know nothing at all, nor do we know when it made its first appearance in England.

In an Anglo-Saxon book on medicine, called *Læce Boc* (leech book), written about the year 950, reference is made to a disease called póc adl or pustular disease, which may or may not be a name for variola. But in the *Compendium Medicinae* of Gilbertus Anglicus, written three hundred years later, or about 1250, there is a chapter upon variolae and morbilli, which were, no doubt, our small-pox and measles. About sixty years later, John of Gaddesden wrote his book called *Rosa Medicinae*, which I mention because the treatment he recommends for small-pox has become famous. A red scarlet should be taken—scarlet is a Persian word which originally signified not a colour, but some kind of costly thin cloth—I say, he recommends that a red scarlet be taken, or any other red cloth, and that the variolous patient be entirely wrapped up in it. He goes on to say that he thus treated a son of the most noble king of England, and that he made everything round the bed to be red, and that it is good treatment, and that he cured his patient without any traces of the variolae. The king was Edward I, and the son is supposed by Dr. Norman Moore to have been Thomas of

Brotherton. For this method of treatment, John of Gaddesden has been held up to ridicule or worse; Sir Thomas Watson fears that he was a very sad knave: but there is no evidence that John of Gaddesden was a knave, or that he invented this special method of treatment, which turns out to be not at all ridiculous. Totally to exclude the rays at the violet end of the solar spectrum from acting upon the skin is said to have the remarkable effect of preventing pitting in small-pox, and this is just what Gaddesden tells us he succeeded in doing—'I cured him without any vestiges of the pocks.' During the last few years many physicians (of whom Dr. Finsen of Copenhagen is one) have treated variolous patients by red light, and have succeeded in curing confluent small-pox in unvaccinated patients, without suppuration, secondary fever, or pitting.

Dr. Norman Moore tells me that in a manuscript copy of the *Breviarium Bartholomaei*, compiled by John Mirfield, a canon regular of St. Austin in the priory of St. Bartholomew in West Smithfield, and written about 1387 for the hospital of St. John the Baptist attached to the Abbey of Abingdon, a

manuscript which is now in Pembroke College, Oxford, on fol. 43a, after the heading 'De variolis et morbilis' are written the words '*i.e.* smal pockes'. This is the earliest known use of the term small-pox.

In what year soever the disease was brought among us, it became in course of time a dreadful scourge. I suspect that it reached its highest degree of virulence in the seventeenth century; at least the literature of that period teems with allusions to small-pox. It decimated the population. No doubt many of you remember Macaulay's account of the death of the wife of William III, Queen Mary, who died on the eighth day of haemorrhagic small-pox. She 'had during two or three days been poorly; and on the preceding evening grave symptoms had appeared. Sir Thomas Millington, who was Physician-in-Ordinary to the King, thought she had the measles. But Radcliffe, who, with coarse manners and little book learning, had raised himself to the first practice in London, chiefly by his rare skill in diagnostics, uttered the more alarming words, small-pox. That disease, over which science has since

achieved a succession of glorious and beneficent victories, was then the most terrible of all the ministers of death. The havoc of the plague had been far more rapid; but the plague had visited our shores only once or twice within living memory; and the small-pox was always present, filling the churchyards with corpses, tormenting with constant fears all whom it had not yet stricken, leaving on those whose lives it spared the hideous traces of its power, turning the baby into a changeling at which the mother shuddered, and making the eyes and cheeks of the betrothed maiden objects of horror to the lover.'

Such was the small-pox two hundred years ago: let us now inquire how our forefathers treated the disease. I turn to a translation of Riverius's *Practice of Physic,* published in London in 1668, and I read as follows: 'The cure of the small-pox is performed in the satisfaction of four indications. Whereof the first consists in the evacuation of the peccant humours; the second in assisting the motion of nature, or helping to expel the pox; the third in the opposition of the malignant and venomous quality;

the fourth in correction of symptoms. First, that the patients be kept in a warm room, to the end their pores may be kept open, and the breaking out of the small-pox may there be furthered. Therefore they must be kept in a chamber well shut, which the cold air must in no wise enter into. And for the same cause they must be moderately covered with clothes. Many are also wont to keep an ewe or wether in the chamber or on the bed,' and so on, for time will not allow me to enumerate all the other details of treatment—the alexipharmacs, the cordials, the diascordium, Venice treacle, and applications to the skin. And when you bear in mind that these therapeutics were carried out, in most cases, not by physicians but by very ignorant women, you will readily agree that recovery of the patient was not much beholden to the treatment.

Cooling Treatment.—But a man had arisen who was to change all this: Thomas Sydenham published his first medical work in 1666, and the treatment of small-pox constituted an important part of his subsequent writings. What Sydenham said in effect was this: You may talk as much as you please about

evacuating peccant humours, assisting the motion of nature, and opposing malignant and venomous qualities, and I myself may sometimes use such expressions; but, in the name of common sense, bring your treatment to the test of experience; do most patients recover under this method of treatment or under that? And he came to the conclusion that most patients recovered under a treatment which was in many respects contrary to that in customary use; and he introduced what was called the cooling treatment. You will find it best set forth in his *Epistolary Dissertation.* For example, the noble Lady Dacre sent for him to attend her grandson, Mr. Thomas Chute, in the flower of his age, and suffering from what turned out to be a very severe attack of confluent small-pox. Take this as a sample of Sydenham's treatment of the young man about the end of the first week, when things were at their worst. 'I gave him an ounce of syrup of poppies out of cowslip water at bedtime, and repeated it every night. I allowed him no more than his usual bedclothes. He might eat oatmeal porridge and barley broth, and occasionally a roasted apple. He

might drink a little small beer. On the eighth day I laid an onion wrapped in linen, on the soles of his feet, and renewed it every day until he was out of danger,' a harmless remedy, even if useless. Sydenham might have complained with Virgil, *Hos ego versiculos feci, tulit alter honores*, for the physicians who came after him reaped the profit of his improvements in medical practice, and especially Radcliffe, whom Macaulay speaks of in the passage I quoted to you just now. The impression left upon my mind is that Sydenham was not a very successful man as the world commonly reckons success; but I think he attained the most precious gift which man can attain, inward peace. He ends the *Epistolary Dissertation*, to which I just now referred, with this strain of reflections. 'And now, worthy sir, I desire you to accept this small treatise favourably, which was designedly written to return you thanks for your approbation of my other works. And, indeed, I have so seldom received anything like approbation, that either I have merited no such thing, or else the candid and generous men whom nature has framed with such excellency of mind as to know how to be

grateful, are very few, scarce so many as the gates of Thebes, or mouths of wealthy Nile. Yet, notwithstanding, I endeavour all I can, and will do so, to learn and promote the method of curing diseases, and to instruct those who are less conversant in practice than myself, if any such there be. Let other people think of me what they please. For having nicely weighed whether it is better to be beneficent to men or to be praised by them, I find the first preponderates and most conduces to peace of mind. As for fame and popular applause, they are lighter than a feather or a bubble, and more vain than the shadow of a dream. But if any think that riches got by such a reputation, has in it somewhat more of solidity, let them enjoy what they have scraped together with all my heart, but let them remember that many mechanics of the most sordid trades get and leave more to their children.' We know that Sydenham read Boethius's Consolation of Philosophy. 'For he turned, and saw under the sun, that the race is not to the swift, nor the battle to the strong, nor bread to the wise, nor riches to men of understanding, nor favour to men of skill; but time and chance overtake them all.'

Inoculation. After Sydenham's death his improved method of treatment was widely adopted, and we may believe that the ravages of small-pox were somewhat stayed thereby. Yet a few years more, and another means of dealing with the disease was introduced; I refer to inoculation, which was first performed in England at the desire of the famous Lady Mary Wortley Montague, in 1721. Her only brother, Lord Kingston, when under age, but already a husband and a father, had been carried off by small-pox, and she herself had suffered severely from it; which, though not leaving any marks upon her face, had destroyed her fine eyelashes, and had given to her eyes a fierce look which impaired their beauty. But the innovation was not well received, and she often declared that she would never have attempted to introduce the new treatment, if she had foreseen the vexation, persecution and obloquy that it would bring upon her.

I shall say nothing more about inoculation, excepting this, that it seems to have been a success or not a success according to the point of view from which we regard it. So far as the inoculated persons were

concerned, the mortality from small-pox was much diminished; few inoculated patients died. But so far as the whole nation was concerned, the mortality from small-pox was much increased. 'The infection spread more widely; many persons were obstinately prejudiced against inoculation; many were altogether wanting in foresight, and neglected to avail themselves of its advantages; and many could not afford the time and expense incident to it. From these causes a large number of unprotected persons continued to exist, and the small-pox spread more widely than before, inasmuch as inoculation established so many new centres of infection.' In short, there seems to be no doubt that the risk, to those unprotected, of infection by small-pox was greater than before.

Vaccination. I come now to vaccination. Jenner tells us that he had heard that 'when the Duchess of Cleveland (he means King Charles the Second's Duchess) was taunted by her companions that she might soon have to deplore the loss of that beauty which was then her boast, the small-pox at that time raging in London, she made a reply to this effect,—

that she had no fear about the matter, for she had had a disorder which would prevent her from ever catching the small-pox'. This certainly seems to be an allusion to cow-pox. Early in the last century the milkmaids of some of the south-western counties knew that cow-pox prevented small-pox.

About the year 1745 this fact became known to a boy named Benjamin Jesty. Thirty years later, in 1774, he inoculated his wife and two sons (aged three years and two years) with the cow-pox, or, in other words, he vaccinated them from the cow, in order to 'counteract the small-pox at that time prevalent where he resided'. But behold the fate of a reformer! After Jesty's vaccinations, 'his friends and neighbours, who hitherto had looked up to him with respect on account of his superior intelligence and honourable character, began to regard him as an inhuman brute, who could dare to practise experiments upon his family, the sequel of which would be their metamorphosis into horned beasts. Consequently the worthy farmer was hooted at, reviled, and pelted whenever he attended the markets in his neighbourhood. He remained, however, undaunted,

and never failed from this cause to attend to his duties.'

In 1805 he and his family came from Downshay, in the Isle of Purbeck, up to London on a visit. Jesty's portrait was painted, and one of his sons, whom he had vaccinated thirty years before, 'very willingly submitted publicly to inoculation for the small-pox in the most vigorous manner, and Mr. Jesty also was subjected to the trial of inoculation for the cow-pox after the most efficacious mode, without either of them being infected.' The portrait[1] shows 'a good specimen of the fine old English yeoman dressed in knee breeches, extensive double-breasted waistcoat, and no small amount of broadcloth. He is represented sitting in an easy chair, under the shelter of a widespreading tree, with his stick and broad-brimmed hat in his left hand. His ample frame is surmounted by a remarkably good head, with a countenance which at once betokens firmness and superior intelligence'. Upon his tomb in the churchyard at Worth Maltravers in Purbeck, in

[1] An engraving from the painting may be seen in the portfolio of the Royal Society of Medicine.

Dorset, is this epitaph:—'Sacred to the memory of Benjamin Jesty, who departed this life on the 16th April, 1816, aged seventy-nine years. He was born at Yetminster, in this county, and was an upright honest man, particularly noted for having been the first person known that introduced the cow-pox by inoculation, and who, from his great strength of mind, made the experiment from the cow on his wife and two sons in the year 1774.' It is a notable fact that a circle with a radius of five miles can be drawn upon the map of Dorset so as to include Winford Eagle—the birthplace of Thomas Sydenham; Rampisham—the birthplace of Francis Glisson; and Yetminster—the birthplace of Benjamin Jesty.

I come now to Edward Jenner. He was born at Berkeley, in Gloucestershire, in 1749. When he was twenty years old, in 1769, 'he was pursuing his professional education in the house of his master at Chipping Sodbury, in the same county, when a young woman came to seek advice; the subject of small-pox being mentioned in her presence, she immediately observed, "I cannot take that disease, for I have had cow-pox."' From this time forth his mind never

ceased to reflect upon the milkmaid's observation. 'To everything there is a season, and a time to every purpose under heaven.' It is clear that the fullness of time for the disclosure of vaccination had come, and the man for the purpose was ready. Men famous for one great discovery often have their attention drawn thereto in youth, and the rest of their life is wholly devoted to the development of their one idea. Jenner was essentially a man of one idea. For thirty years he was collecting facts and knowledge relative to cow-pox, and his book, which was published when he was nearly fifty years old, represents the final stage of his discovery, beyond which he never advanced: his book exhausted him. During those thirty years he studied the natural history of cow-pox, its relation to that disease which in horses is called the grease, the different eruptions on the teats of cows which are communicable to the hands of milkmaids, the distinction of that kind of eruption which is protective against small-pox (that which he called the true cow-pox), and lastly the possibility of intentional vaccination as a prophylactic. Jenner's procedure seems to have been very slow, and he did

not keep what was passing through his mind a secret. When he came up to London at the age of twenty-one, he tried to draw John Hunter's attention to the subject. After Jenner had settled in practice at Berkeley, he talked so much about cow-pox in the medical societies of the neighbourhood, and seemed so little able to talk about anything else, that he came to be looked upon as a well-meaning bore. Jenner's merit was that he believed in himself and in vaccination. The cow-herds and milkmaids of Wessex discovered that cow-pox prevented small-pox, Jesty practised vaccination, but Jenner was full of the enthusiasm of a man who believes that he has made a great discovery; he saw the immense power latent in vaccination, and he did not rest until he had made other men see it too.

What I have called Jenner's book was published in June, 1798; his subsequent writings did but re-affirm and illustrate the doctrines of his first book. To the chief doctrine, namely, that cow-pox is preventive of small-pox, he added two propositions (which he himself calls conjectures), namely, that cow-pox is derived from a disease of horses named grease; and that cow-

pox, grease, and small-pox are three different forms of what is essentially one and the same morbid poison. From the time when Jenner first propounded these theses up to the present day, they have not ceased to meet with strong opposition. It is no intention of mine to enter the fray, which has been carried on with more heat and less temper than might have been desired. Arguments have done their best, we have had enough of them, and the disputed questions are not yet settled. What we want are more facts, and, in particular, I think we want what Bacon calls instances of alliance. Judge of what would be the result, were such an instance to be discovered in the form of a microbe, an *ens variolarum*, which we could use as a touchstone of what is small-pox and what is not. Jenner's conjectures would disappear, they would be either truths or not. Meanwhile, we cannot get beyond opinions.

Jenner possessed the first and most necessary of virtues, namely, courage. He never shrank from avowing his opinions. The name which appears on the title-page of the book, 'Variolae Vaccinae,' indicates as clearly as possible his belief that cow-

pox is simply small-pox occurring in the cow. And although he did not invent the term variolae equinae or horse small-pox, he could not have declared his opinions in this respect more strongly than he did when he went into some stables with his nephew, George Jenner, and, pointing to a horse with diseased heels, said, 'There is the source of small-pox.' Mark, not merely 'There is small-pox', but 'There is the source of small-pox'. Indeed, he says much the same thing in the earliest pages of his book. Jenner's opinions concerning horse-pox are by no means to be lightly set aside; and they seem to have become stronger as he became older. In his book he doubts whether the virus of grease, directly inoculated into man, can be relied upon as a preventive of small-pox. But his friend Baron, who knew him in after life, tells us that 'Dr. Jenner was in the practice of using equine matter [for inoculation] with complete success', and that grease 'when communicated to man is capable of affording protection against small-pox, even though it had never passed through the cow'. Here is a drawing[1] which shows the kind of

[1] Series lvii, No. 902, St. Bartholomew's Hospital Museum.

eruption which grease produces in man, and you will observe its close resemblance to cow-pox. The drawing was taken from a patient of Mr. Langton's, from a groom, who, seven days before admission to the hospital, had charge of a horse suffering from inflammation of the legs and cracked heels, from which there was no discharge, but only a foul smell.

I will conclude this topic by quoting a paragraph from the *Traité de Médecine* of Charcot and Bouchard, published in 1892, and I choose a foreign book in order that you may know what they think about these matters abroad. 'Horse-pox (Jenner's grease) in spite of the descriptions of Loy and Sacco, was for a long time confounded with other diseases of horses' feet, but the researches of Lafosse and Bouley have determined exactly the symptoms of grease. It is characterized by an eruption which may appear on any part of the body, and is often confined to a limited space, such as the lower part of the legs, around the nostrils and lips, within the nasal fossae or the mouth. The eruption consists of vesicles which attain maturity on the eighth or ninth day.

Inoculation of cows with the exudation causes cow-pox. Inoculation of infants causes well-marked vaccinia, but with very violent inflammation. Conversely, cow-pox or humanized vaccine, inoculated into the horse, produces horse-pox.'

From the time of the first publication of Jenner's book, vaccination has been a field of strife. What was his attitude with respect to this wordy war? Baron tells us that 'although Dr. Jenner was the object of many harsh and unfounded assertions, he never thought it necessary to weaken that strong position which truth and knowledge had enabled him to take, by replying to them'. He agreed with Ben Sirach, that 'if thou blow a spark it will burn, and if thou spit upon it, it shall be quenched'.

Segregation. For divers reasons vaccination did not succeed in exterminating small-pox. Of late years a powerful auxiliary has been found in stricter laws compelling segregation of variolous persons: and at the present time London may be said to be free from the disease. Thus has Apollo slain the small-pox python.

APPENDIX II

ABRAHAM COWLEY, M.D., AND HIS PHILOSOPHICAL COLLEGE.[1]

ABRAHAM COWLEY was born in the city of London in the year 1618. The precise place and date of his birth are unknown. His father, Thomas Cowley or Cooley, made his will 'on the four and twentieth day of July, Anno Domini one thousand six hundred and eighteen, and in the sixteenth year of the reign of our Sovereign Lord King James' the First. In this will Thomas Cowley is described as being a 'citizen and stationer of London, and of the parish of St. Michael at Querne'. The will was proved only eighteen days after it was made, namely, on the eleventh day of August, in the same year, by Thomasine Cowley, widow of the deceased Thomas Cowley.

The church of St. Michael at Quern, which was burnt in the Fire of London and was not rebuilt, can

[1] Read before the Abernethian Society in 1903.

be easily identified on Ralph Aggus's map, by the help of Stow's survey. Stow says, 'But now to turn again to the Black Friars, through Bowyer Row, Ave Mary Lane, and Paternoster Row, to the church of St. Michael ad Bladum, or at the Corne (corruptly, at the Querne), so called because in place thereof was sometime a corn-market, stretching up west to the Shambles. At the east end of this church stood a cross, called the Old Cross in West Cheap, which was taken down in the year 1390. West from the said church, some distance, is another passage out of Paternoster Row, and is called (of such a sign) Panyer Alley, which cometh out into the north, over against Saint Martin's Lane.' So it would seem that the church of St. Michael at Quern stood at the west end of Cheapside, near to the spot where the Peel statue now stands.

Abraham Cowley's birth happened after his father's death. There is no proof that he was born in his father's parish (for the early registers are lost); but if he were we may perhaps go on to suppose that his father was a bookseller in Paternoster Row. Anyhow, Abraham Cowley was born in the heroic age of

English history. Shakespeare had been dead two years; Francis Bacon had just been made Lord Chancellor and Baron Verulam; Hobbes was thirty years old; Harvey was Physician to our Hospital, and had just been appointed Physician Extraordinary to the King; John Pym was thirty-four years old, and a Member of Parliament; Hampden was ten years younger; Robert Blake was twenty years old; Cromwell was nineteen; and Milton was a boy of ten, living in Bread Street, and studying at St. Paul's School.

The first glimpse which we get of Cowley is given us by himself. 'I remember,' he says, 'when I began to read and to take some pleasure in it, there was wont to lie in my mother's parlour (I know not by what accident, for she herself never in her life read any book but of devotion), but there was wont to lie Spenser's works. This I happened to fall upon, and was infinitely delighted with the stories of the knights and giants and monsters and brave houses which I found everywhere there; and by degrees, with the tinkling of the rhyme and dance of the numbers, so I think I had read him all over before

I was twelve years old, and was thus made a poet' irremediably. Happy he, with such a mother and in such a home, with its peace and innocence, and 'pure religion breathing household laws'.

Cowley's mother was left a widow with seven children, yet she managed to obtain a learned education for her youngest son. She procured his admission into Westminster School, where his character rapidly unfolded itself. He tells us, 'As far as my memory can return back into my past life, before I knew or was capable of guessing what the world or glories or business of it were, the natural affections of my soul gave me a secret bent of aversion from them, as some plants are said to turn away from others by an antipathy imperceptible to themselves and inscrutable to man's understanding. Even when I was a very young boy at school, instead of running about on holidays and playing with my fellows, I was wont to steal from them and walk into the fields, either alone with a book, or with some one companion, if I could find any of the same temper. I was then, too, so much an enemy to all constraint, that my masters could never prevail on me, by any persuasions or

encouragements, to learn without book the common rules of grammar, in which they dispensed with me alone, because they found I made a shift to do the usual exercise out of my own reading and observation.' In short, he was born to be a scholar. Men may be roughly divided into two classes, *togati et militares*, gownsmen and swordsmen, thinkers and fighters, scholars and men of business. A scholar loves knowledge for its own sake, he pursues truth and the fair form of intellectual beauty simply because he cannot help doing so; this is his goal in life, he has no other. We will not stay to characterize the business man; we will only observe that a man's worth is to be estimated by the value of the objects which he desires and seeks after. As he loves, so he lives.

'With these affections of mind,' Cowley goes on to say, 'and my heart wholly set upon letters, I went to the University' of Cambridge, and was made a scholar of Trinity College. He was elected a minor Fellow of the same college in the twenty-second year of his age, and a major Fellow in the twenty-fourth. But the Civil war broke out, and proved a turning-

point in his career. When a Parliamentary visitation of the University was made at the end of the year 1643, he refused to take the Covenant, and was ejected from Cambridge, 'torn from thence,' as he says, 'by that violent public storm which would suffer nothing to stand where it did, but rooted up every plant, even from the princely cedar to me the hyssop.' A great misfortune for Cowley; he lost his Fellowship, and had little else to live upon. He withdrew to Oxford, the head quarters of the King's party, and there he 'grew familiar with the chief men of the court and the gown, whom the fortune of the war had drawn together. And, particularly, he came into the service of my Lord St. Albans' (Sprat). Now this Lord St. Albans was not the great Viscount St. Alban (better known as Francis Bacon, who had been dead for some years), but a very different man, of bad character, Henry Jermyn, who gave his name to Jermyn Street, Piccadilly.

In the suite of Jermyn Cowley attended Queen Henrietta when she retired into France. He little thought that twelve years of exile were before him; we have it from his own mouth that when the refugees

first abode in France, they expected every post would bring them news of their being recalled. 'Upon this wandering condition of the most vigorous part of his life he was wont to reflect, as the cause of the long interruption of his studies. He was absent from his native country above twelve years, which were wholly spent either in bearing a share in the distresses of the Royal Family, or in labouring in their affairs. To this purpose he performed several dangerous journeys into Jersey, Scotland, Flanders, Holland, or wherever else the King's troubles required his attendance. But the chief testimony of his fidelity was the laborious service he underwent in maintaining the constant correspondence between King Charles the First and the Queen, his wife. In that weighty trust he behaved himself with indefatigable integrity and unsuspected secrecy. For he ciphered and deciphered with his own hand the greatest part of all the letters that passed between their Majesties, and managed a vast intelligence in many other parts, which for some years together took up all his days, and two or three nights every week' (Sprat). This was harnessing a race-horse to a cart; think of the nimble-minded

poet occupied in doleful drudgery of this kind, ciphering and deciphering! But such is the irony of life. He was buying experience at a heavy price; far better had he adopted the profession which he always affected. He would have been independent, even if poor; he might have pursued his studies in peace, heedless of the hurly-burly of politics and war; perhaps he might have lived the calm and quiet life which he loved so much.

As Cowley's final judgement upon this period of his career, 'I saw plainly,' he says, 'all the paint of that kind of life the nearer I came to it; and that beauty which I did not fall in love with, when, for aught I knew, it was real, was not likely to bewitch or entice me when I saw that it was adulterate. I met with several great persons whom I liked very well, but could not perceive that any part of their greatness was to be liked or desired. Though I was in a crowd of as good company as could be found anywhere, though I was in business of great and honourable trust, though I ate at the best table, and enjoyed the best conveniences for present subsistence that ought to be desired by a man of my condition, in

banishment and public distresses,' yet he was unhappy; in fact, he was a needy dependent.

Cromwell's victories in Ireland and Scotland, the battle of Worcester, and Blake's victories at sea, put an end to Cowley's servitude, and to his expectations. His occupation was gone. He was nearly forty years old, and still a poor man. His noble patrons had fed him upon the chameleon's dish; he had been promise-crammed. In order to find some way of earning his living, I suppose, he returned to London, but was soon arrested for a notorious royalist and a suspected spy; he was made a close prisoner, was repeatedly examined, committed to a severe restraint, and scarcely at last obtained his liberty upon the hard terms of a thousand pounds bail. He fortunately found a true friend in Dr. Charles Scarborough, who is best remembered as having been a disciple and friend of William Harvey.

Scarborough took upon himself the surety of the thousand pounds bail. And thus probably were Cowley's thoughts turned towards the practice of physic. 'To this purpose, after many anatomical dissections, he proceeded to the consideration of

simples, and having furnished himself with books of that nature, he retired into a fruitful part of Kent, where every field and wood might show him the real figures of those plants of which he read. Thus he speedily mastered that part of the art of medicine' (Sprat), and poet-like, he wrote six books of Latin verses on plants. He was made Doctor of Physic at Oxford in December, 1657, and became acquainted with some of the learned men of the day, who were successfully promoting the natural sciences; but concerning this aspect of Cowley's career I shall speak hereafter.

The restoration of the monarchy now occurred to interrupt his schemes, whatever they were. At the same time one of his old delusions revived in full vigour. Both Charles the First and Charles the Second had promised him the Mastership of the Savoy, an ancient palace which stood on ground part of which is doubtless well known to you, for it is the site of the Examination Hall of the Royal Colleges. In Cowley's time the Savoy had fallen into decay, and seems to have been a sort of hospital, something like the Charterhouse at present. The post of Master

was much coveted, and Cowley had set his heart upon it. It was given to Henry Killigrew, a doctor of divinity, whose sister was one of the many mistresses of King Charles II. The sensitive and modest poet both mitigated and recorded his disappointment by writing some of his best verses in a poem called 'The Complaint.' 'In a deep vision's intellectual scene' the Muse of lyric poetry appears to him, and reflecting his own feelings, speaks the true language of his heart,[1] although when the Muse has ended Cowley thinks it prudent to extenuate her sarcasms. This was hardly the way to regain lost favour; afterwards, however, by the interest of Lord St. Albans and the Duke of Buckingham, he obtained a lease of some of the Queen's lands at Chertsey. A lease implies a landlord; I suppose that he had to pay rent, and that he sublet some of the land, and farmed the rest. About the same time his Fellowship at Trinity College was restored to him, and henceforth he was at least free from the fear of want.

[1] 'Go on, twice seven years more thy fortune try;
Twice seven years more, God in His bounty may
Give thee, to fling away
Into the court's deceitful lottery.'

Cowley's life at Chertsey is that which has endeared him to posterity. But at first he was still beset by delusions. 'I never,' he says, 'had any other desire so strong and so like to covetousness as that one which I have had always, that I might be master at last of a small house and large garden, with very moderate conveniences joined to them, and there dedicate the remainder of my life only to the culture of them and study of nature.' He looked forward to his future life at Chertsey with rapture. 'I thought,' says he, 'when I went first to dwell in the country, that without doubt I should have met there with the simplicity of the old poetical golden age. I thought to have found no inhabitants there but such as the shepherds of Sir Phil. Sidney in Arcadia or of Monsieur D'Urfé upon the banks of Lignon, and began to consider with myself which way I might recommend no less to posterity the happiness and innocence of the men of Chertsey.' 'There were hills which garnished their proud heights with stately trees; humble valleys whose base estate seemed comforted with the refreshing of silver rivers; meadows enamelled with all sorts of eye-pleasing flowers;

thickets which, being lined with most pleasant shade, were witnessed so too by the cheerful disposition of many well-tuned birds; each pasture stored with sheep feeding with sober security, while the pretty lambs with bleating oratory craved the dam's comfort; here a shepherd's boy piping as though he should never be old; there a young shepherdess knitting and withal singing, and it seemed that her voice comforted her hands to work, and her hands kept time to her voice-music' (Sidney). This was the delightful vision which Cowley thought to find realized on the banks of Thames. But his notions of country life were no more than traditional fictions which experience was bound to dispel. 'To confess the truth,' says he, 'I perceived quickly, by infallible demonstrations, that I was still in old England, and not in Arcadia or La Forrest; and that if I could not content myself with anything less than exact fidelity in human conversation, I had almost as good go back and seek for it in the Court, or the Exchange, or Westminster Hall.' A letter which he wrote soon after his arrival at Chertsey is more definite. 'The first night that I came hither I caught so great a

cold, with a defluxion of rheum, as made me keep my chamber ten days; and two after had such a bruise on my ribs with a fall that I am yet unable to move or turn myself in my bed. This is my personal fortune here to begin with. And besides, I can get no money from my tenants, and have my meadows eaten up every night by cattle put in by my neighbours.'

Cowley now settled down at Chertsey for life. His experience of city, Court, and country had taught him that men everywhere are much the same. He had learned that the universe is a perpetual whirl, and that rest is not vouchsafed unto the eye from seeing, nor unto the ear from hearing. We may believe that he had gained as much enlightenment as he could gain. But I feel that when we come to a man's last, and largest, and loftiest experiences of life we are entering into a holy place, where it behoves us not to talk, but to meditate in silence; and I will say no more than that Cowley would no doubt have joined in the confession of faith which Adam makes to the archangel in the last book of *Paradise Lost*. Gotama and Plato, Koheleth and

Boethius, Montaigne and Shakespeare; all wise men become quietists at last.

Nothing can be had for nothing, and for wisdom, Cowley, like all men, had to pay the price of repeated disappointment and sorrow. Together with wisdom he attained freedom; he had always been virtuous; and possessing wisdom, freedom, and virtue, what more could he desire? He now wrote his essays, which alone of all his numerous writings can be said to live. As a poet he is almost forgotten, for he wrote to display his wit and fancy, to surprise, to gain notoriety and fame. But great thoughts come more from the heart than from the wit, and his essays speak the 'language of his heart,' they are full of the wisdom of his mature experience 'upon some of the gravest subjects that concern the contentment of a virtuous mind' (Sprat). Hence the essays come home to the business and bosoms of all men, and have gained for Cowley a place beside Addison and Charles Lamb. The beautiful little ode (*Epitaphium vivi auctoris*) with which he closes his book, breathes the gentle, tender and pensive spirit of the man.

At Chertsey he died, in the forty-ninth year of his

age. He was not old, but he died not prematurely, for this life had nothing more to teach him.

Amid all the changes and distresses of his life Cowley never lost his love of learning; this is the aspect of his character which I shall now set before you. After he gave up his connexion with the Court 'he betook himself to the contemplation of nature, as well furnished with sound judgement, and diligent observation, and good method to discover its mysteries, as with abilities to set it forth in all its ornaments. This labour about natural science was the perpetual and uninterrupted task of that obscure part of his life' (Sprat).

And first of his friendship with Thomas Hobbes. Cowley no doubt came to know Hobbes when they were both refugees in Paris. Hobbes returned to London in 1651, and Cowley in 1656. Soon after his return Cowley published a book of poetry containing an ode in celebration of Hobbes, whose most important works had been published in 1650 and 1651, when he was more than sixty years old. Hobbes is a thoroughly English thinker; he sets

his feet firmly on the ground, and has no notion of trying to soar into the sublime ether of absolute being. His philosophy was the fruit of long and patient reflection; his thought fermented until it worked itself clear, which is more than can be said of many philosophers. His clear thinking leads to clear writing: his language is a perfect exponent of his thought. 'In the prime qualities of precision and perspicuity, and also in economy and succinctness, in force and terseness' (Craik), Hobbes's is the perfection of a scientific style. His language is, in Macaulay's opinion, more precise and luminous than has ever been employed by any other metaphysical writer.

Hobbes was a contemporary admirer of Harvey. In the dedicatory epistle to the book *De Corpore*, published in 1655, while Harvey was still living, Hobbes writes that 'the science of man's body, the most profitable part of natural science, was first discovered with admirable sagacity by our countryman Dr. Harvey'. And Hobbes goes on to say that 'the science of human bodies hath been extraordinarily advanced by the wit and industry of

physicians, the only true natural philosophers, especially of our most learned men of the College of Physicians in London'.

I have spoken of a friend of Harvey, Dr. Charles Scarborough, the physician, who set Cowley free from prison. Perhaps it was in gratitude for this good service that a panegyric ode was addressed by Cowley to Scarborough; but there seems not to have been anything very definite to praise in him. Cowley's ode loses itself in vague extravagant eulogy, and is an unfavourable example of his Pindaric art.

It was probably through Scarborough that Cowley came to know the great Harvey himself. Cowley composed an ode to Harvey, but it is hardly worthy of the praiser or the praised.

By far the best evidence of the deep interest which Cowley took in natural science is found in a pamphlet which he published in 1661, containing 'A Proposition for the Advancement of Learning', by A. Cowley. Cowley's is a beautiful scheme, wise and practical; yet we cannot be surprised that it came to nothing when we remember the fate of the

college actually founded and endowed by Sir Thomas Gresham, many years before, in Bishopsgate Street. Gresham College, had it been fostered generously and in the spirit of its founder, or had it been only administered with simple honesty, might have grown into a flourishing university for the City of London. But in a hundred years this college had become 'an object of contempt to the citizens. Petitions were sent into Parliament for leave to destroy the building; and though the Government in the reigns of William III and George I evinced their respect for the will of Sir Thomas Gresham by rejecting these petitions, yet the Legislature of 1767 passed an Act authorizing the destruction of the building. For the poor sum of 500*l.* per annum the trustees agreed to demolish the college and to part with all the land: but this was not all. Not only were the citizens of London thus deprived of their college, with the spacious lecture hall in which they had been accustomed to assemble, but another part of the Act compelled the trustees and guardians of this property to pay 1,800*l.* for the expense of pulling the college down. That is, they were constrained, by an especial

law, to commit a gross and flagrant violation of their trust, and to employ those very funds which Gresham had vested for the maintenance of his college in demolishing it. Am I wrong in asserting that this transaction has had no parallel in any civilized country? Nor was any effort made by the citizens to oppose the disgraceful breach of trust. Thus was this venerable seat of learning and science, where Barrow, Briggs, Bull, and Wren had lectured, and where Newton, Locke, Petty, Boyle, Hooke, and Evelyn associated for the advancement of knowledge, razed to the ground' (Weld). Offices for business were built upon the land.

Our old English universities have proceeded upon a wrong principle, inherited from the age when they were founded. They have assumed that knowledge is a more or less complete dogmatic system, to be handed down from one generation to another. But knowledge, like all things else, is in perpetual change; it never is, but always is becoming. No sooner is our science taught than it is already obsolete and ready to perish. True universities teach by learning—learning is the main thing; and they could not

adopt an apter motto than that of Solon, Γηράσκω δ' αἰεὶ πολλὰ διδασκόμενος.

London has had a university in name for sixty years and more—a mere examining board. Efforts are now being made to develop it into a 'teaching university', but should these efforts be successful the result will fall short of Cowley's idea. Cowley's intention was the same as that of Salomon's House in Bacon's *New Atlantis:* 'The end of our foundation is the knowledge of causes and secret motions of things, and the enlarging of the bounds of human empire to the effecting of all things possible.'

Cowley's main object was the advancement of learning by research. His professors were to be devoted to experiment, observation, discovery, and invention. Teaching or the education of youth would have been a secondary purpose. His students would have learned more from what they saw than from what they heard, more from example than from precept; they would have taught themselves.

Cowley's college remained a poet's dream. Yet it had an unforeseen result, and promoted the foundation of the Royal Society. Sprat, the friend of

Cowley and historian of that society, tells us that it had its beginning in the year 1660, when a number of learned men, who had been in the habit of meeting in Gresham College, began to imagine some greater thing. 'While they were thus ordering their platform there came forth a treatise which very much hastened its contrivance, and that was a proposal by Master Cowley of erecting a philosophical college. Some of the particulars of his draft the Royal Society is now putting in practice' (Sprat). But the Royal Society is no more than a small part of what Cowley's college would have been. 'However,' says Sprat, 'it was not the excellent author's fault that he thought better of the age than it did deserve; his purpose in it was like himself, full of honour and goodness.' The first official record of the society, dated November 20, 1660, contained a list of persons who were judged to be willing and fit to join in the design. In this list appear the names of many eminent physicians, Dr. Cowley being one of the number.

Cowley celebrated the society in a noble ode prefixed to Sprat's history. Much of the poem is a

celebration of Francis Bacon, who at that time and long afterwards was deemed to have done more than any other man to promote natural philosophy. In the last—the nineteenth—century some persons arose who, animated by the envy which is innate in vulgar souls, denied Bacon's worth, and strove to belittle his greatness. But to Cowley, Bacon is the Moses who set men free from Egyptian thraldom, and idolatrous worship of traditional authority, that 'scarecrow deity'. The first book of the *Novum Organum* is a grand hymn prophetic of the time when men shall take possession of the golden lands of new philosophies, which, from the mountain top of his exalted wit, Bacon sees and points out to others, but which he himself is not allowed to enter and possess.

Cowley's relation to learned men did not cease even with his death, for the Fellowship which he vacated thereby was bestowed upon Isaac Newton.

Cowley's imaginary college has a useful lesson for us at this present time, when St. Bartholomew's seems to have arrived at what the old physicians would have called a 'climacteric period'. Greater

changes are impending over the Hospital than it has undergone since it was rebuilt in the middle of the eighteenth century. If I, like Cowley, might indulge my fancy a little, and draw a picture of what I should wish the Hospital to be, I should begin by saying that its relation to London has completely changed during the last two centuries. Our Hospital has lost—irrecoverably lost—the distinguished position which it held in Cowley's day, when St. Bartholomew's, St. Thomas's, and Bethlem were the only hospitals for the sick in London. Now ours is but one among a crowd of hospitals, infirmaries, dispensaries, asylums which have sprung up by scores, and the number of these more or less rival institutions will continue to increase.

But we have also been eminent as the greatest medical school. Herein lies our hope; could we make our medical school more efficient and worthy of its name, in the sense of Bacon and Cowley. The sick poor of London are amply provided for, but London does hardly anything to promote medical knowledge. St. Bartholomew's ought to include a noble school of pathology and medicine, not as an

appendage to the hospital, but an equal to it. The hospital and school should go hand in hand, neither predominant, and each assisting the other.

Preliminary sciences should be taught elsewhere. We should devote ourselves to the study of disease, its causes and cure. But the men who would give themselves up to these great and humane researches must possess the necessary means of living; and here we are brought face to face with the sordid but inevitable question of money. Can nothing be done to arouse in the bosoms of those who are rich some little love for learning? The only return that the man of business and wealth can make for the inestimable benefit which he derives from the labour of the scholar is to contribute towards the scholar's maintenance. Vast sums of money are given away, much of it is thrown away, wasted, in what is called charity; but charity, not guided by knowledge, profiteth nothing.

Do our hospital benefactors ever remember that they contribute nothing towards the support of scholars who are perpetually seeking and finding new means of alleviating or preventing the miseries which

render hospitals necessary? He who endows a hospital shall have the praise he merits, but let us tell him that his bounty fades into insignificance when compared with the charity of men who enrich the whole world by their beneficent labours, men who have expelled fatal and loathsome diseases, men who do all this without fee or reward, save the gratitude of mankind and the testimony of a good conscience.

NOTE TO PAGE 183.

Since the above paragraph was written the activity of surgeons has thrown more light upon the seat of pain in peritonitis. Mr. C. B. Lockwood in his book on Appendicitis (2nd. edit. Lond. 1906) says, 'Inflamed parietal peritoneum is exquisitely sensitive when touched or stretched, and, without doubt, the inflamed visceral peritoneum has the same properties'; p. 155; cf. p. 284. In a letter he says, 'The parietal peritoneum is supplied with somatic sensory nerves. The sensibility of the visceral peritoneum is somewhat peculiar: it is perfectly true that it may be cut with scissors, as for instance, in opening the sigmoid flexure in the second stage in inguinal colotomy; but it is not to be assumed from this that it is insensitive, because the patients do experience some sort of sensation, although it is not always that of pain.'

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